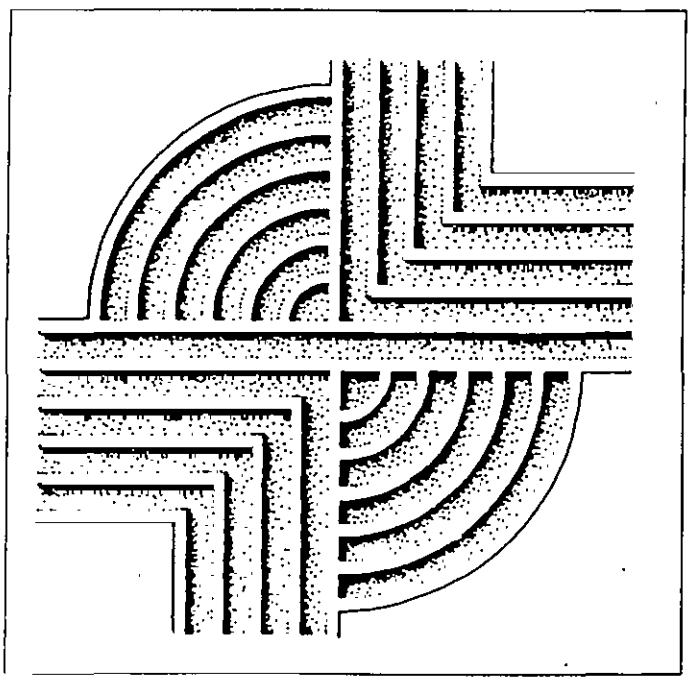
# AN ARCHAEOLOGICAL SURVEY OF THE 230 HA CAMP MACKALL DROP ZONE AND 70 HA MANCHESTER ROAD TRACT, FORT BRAGG, SCOTLAND AND CUMBERLAND COUNTIES, NORTH CAROLINA



CHICORA FOUNDATION RESEARCH SERIES 187

# AN ARCHAEOLOGICAL SURVEY OF THE 230 HA CAMP MACKALL DROP ZONE 70 HA MANCHESTER ROAD TRACT FORT BRAGG, SCOTLAND AND CUMBERLAND COUNTIES, NORTH CAROLINA

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# ABSTRACT

This study represents an intensive archaeological survey of two areas under the oversight of Fort Bragg, North Carolina known as the Camp Mackall Drop Zone and the Manchester Road tract. The Camp Mackall Drop Zone, located in Scotland County, North Carolina contains approximately 230 ha. The Manchester Road tract, located in Cumberland County, North Carolina, within Fort Bragg proper, contains approximately 70 ha.

This work is being done in order to fulfill compliance with the National Historic Preservation Act (Public Law 89-665, as amended by Public Law 96-515), Guidelines for Federal Agency Responsibilities, under Section 110 of the National Preservation Act, Army Regulation AR 420-40, and 36CFR800 (Protection of Historic and Cultural Properties). The project is administered for the United States Army by the National Park Service (NPS), Southeast Regional Office. The scope of work specified that the entire project area be surveyed as high probability using transects and shovel tests spaced at 30 m intervals.

The primary purpose of this investigation is to identify and assess the archaeological remains present at Camp Mackall and Fort Bragg for the National Register of Historic Places. There were also a number of secondary goals which included:

- an examination of changing prehistoric and historic land use;
- the affects of clear-cutting and long-term exposure on archaeological sites;
- the effectiveness of 30 m interval transects at locating significant resources;
- changing lithic material preferences; and
- site function/duration based on artifact content.

These investigations incorporated a review of the site files at the North Carolina Office of Archaeology. A total of 16 previously recorded archaeological sites were found within the Camp Mackall Drop Zone survey boundary. All were initially identified by Dr. Thomas Loftfield for Coastal Zone Resources as a part of a reconnaissance survey of Fort Bragg, Camp Mackall, and Simmons Army Air Field. Additional information concerning this previous survey, and the sites identified by Loftfield, can be found in the **Research Strategy and Methods** section, as well as the **Conclusions**. No previously recorded sites were situated within the Manchester Road survey tract.

A total of 15 sites and 4 isolated occurrences were found or re-identified within the Camp Mackall Drop Zone area. Two sites and one isolated occurrence were discovered in the Manchester Road survey tract. Of the 22 archaeological sites identified, one (31SC88) is recommended as potentially eligible for inclusion on the National Register of Historic Places.

Twenty-one of the 22 sites have prehistoric components and five have historic assemblages. Thirteen of the 21 sites with prehistoric components exhibit only lithic debitage or other non-diagnostic material. A Yadkin component is found at six of the 21 prehistoric sites, representing the most common cultural assemblage identified. Other Woodland assemblages, however, include Hanover materials at two sites, the occurrence of Adam's Creek material at one site, and a Caraway projectile point (probably temporally associated with the Yadkin pottery) at another. Archaic assemblages include four sites with Morrow Mountain materials, two with Guilford, and one each of Hardaway, probable Big Sandy, Kirk, Savannah, and Gypsy.

The historic materials are ephemeral and consist entirely of materials consistent with mid-nineteenth through mid-twentieth century occupation, typified by whiteware ceramics and clear bottle glass.

It is recommended that additional testing take place at the potentially eligible site, 31SC88, as soon as possible. If this site is found to be eligible for inclusion on the National Register, then data recovery should be performed in the near future. This urgency is based not only on the exceptional data losses which have taken place at the survey tract since it was first examined by Coastal Zone Resources in 1979, but also on the fact that landscape modifications seem to be taking place on a daily basis since Chicora's survey in March of 1996. Military activities have already affected the integrity of one site (31SC87) while this report was being produced and it is suspected that any further delays in testing and data recovery will almost certainly result in the further losses.

The recommendation of not eligible for the remaining 21 sites precludes the requirement of additional management activities. The Base Archaeologist, however, may wish to continue collecting these deflating sites using the previously established collection strategy for consistency. The additional data may prove useful to our understanding of settlement and, in particular, site density.

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# ACKNOWLEDGEMENTS

While the work at Camp Mackall and Fort Bragg was conducted in compliance with various national historic preservation requirements, we wish to thank all of those involved for their support and interest in the project. In particular, at Fort Bragg Mr. Wayne Boyko (Fort Archaeologist) and Ms. Bev Boyko (Collections Curator) provided guidance and good humor. We thank them for their help. Mr. Mark Jones of Integrated Training Area Management provided us with GPS assistance. Dr. Evelyn Watkins assisted us with obtaining background information on Camp Mackall.

Dr. David G. Anderson (National Park Service) administered the project for Fort Bragg. We appreciate his interest, encouragement, and confidence. Ms. Kimberly Washington (National Park Service) assisted us in navigating the paperwork for payment — a seemingly essential component of science.

We would also like to thank Ms. Almeta Rowland-White and Dr. Billy Oliver of the North Carolina Office of State Archaeology for providing direction for the background research, for clarifying curatorial issues, and for review comments.

This is a unique opportunity to explore the archaeology of a section of North Carolina which has received relatively little attention. The job, however, has been made much easier by the tremendous number of individuals who have gone before us and on whose work we have repeatedly relied. Some were instructors, some were colleagues, some were collectors, a few crossed these lines, and a very precious few were also friends.

The success of this project is largely due to the dedication and professionalism of the field crew which included Mr. Ian Hamer, Ms. Martha Houston, Ms. Michelle Jones, Mr. Hollis P. Lawrence, Mr. Troy O. Martin, Ms. Rozanna Pfeiffer, and Mr. Shawn T. Small. The surveys were conducted from March 13 to March 23, 1996 and we appreciate their dedication and hard work. Thanks also to Ms. Windi O'Connor and Ms. Rachel Brinson who cataloged and processed the collections for curation.

# INTRODUCTION

## Survey Background

Investigation of the 230 ha Camp Mackall Drop Zone and the 70 ha Manchester Road tract was conducted by Mr. William B. Barr of Chicora Foundation, Inc. for the National Park Service. Fort Bragg is located in south central North Carolina and encompasses portions of Cumberland, Harnett, Hoke, Moore, Richmond, and Scotland counties (Figure 1). Camp Mackall, a subinstallation of Fort Bragg, is situated in Richmond and Scotland counties, and abuts Moore and Hoke counties to the east (Figure 1).

The survey area known as the Camp Mackall Drop Zone is located entirely within Scotland County, and the survey area known as the Manchester Road tract is located entirely within Cumberland County (Figure 2).

No major highways run through Camp Mackall although US 15/501, which travels north-south, skirts the eastern boundary. Only one major North Carolina highway, NC 24/87, which travels north-south, runs through Fort Bragg. Within the Manchester Road tract, one major road, Manchester Road, runs roughly east-west and forms the northern boundary of the survey tract. Other roads within both areas consist of a system of perimeter and firebreak roads as well as random two-rut vehicle tracts accessing different portions of the bases.

The Camp Mackall Drop Zone (Figure 3) was clear cut about 30 years ago to be used as a parachute drop zone. The Green farm operated within the eastern portion of the tract prior to the relatively recent United States takeover of the property. Small clusters of trees can be found today along the northeastern and southern boundaries of the survey tract. Sparse grass is found throughout the survey area. A number of small sand dunes are found in flat upland areas of the tract, particularly in its southern half.

The Manchester Road survey tract (Figure 4) is heavily wooded with a mix of pine and hardwood. McPherson Creek meanders through the central portion of the area and an un-named drainage runs along the western boundary.

Both survey areas were examined as high probability tracts using transects spaced at 30 m intervals. Shovel tests were placed at 30 m intervals along these transects. Once an archaeological site was identified, the area was shovel tested on a north-south cardinal grid pattern at 10 m to 20 m intervals, with the interval of testing determined by site size. In addition, at least one 50 cm square test unit was excavated at each recorded site.

Measurements, in compliance with the National Park Service scope of work, were taken using metric units. In order to maintain consistency throughout this research, all measurements are provided using metric units and Table 1 provides conversions to English measures. The only exception is that of contours on site maps. These measurements, taken from United

Table 1.
Metric Equivalents

| | | |
|---|---|---|
| | LENGTH | |
| kilometer | km | 0.62 miles |
| meter | m | 39.37 inches or 3.28 feet |
| centimeter | cm | 0.39 inches |
| millimeter | mm | 0.04 inches |
| | AREA | |
| hectare | ha | 2.47 acres |
| square km | $km^2$ | 0.3861 square miles |
| | WEIGHT | |
| metric ton | t | 1.1 English tons |

TEMPERATURE

C to F = (°C x 1.8) + 32 = °F

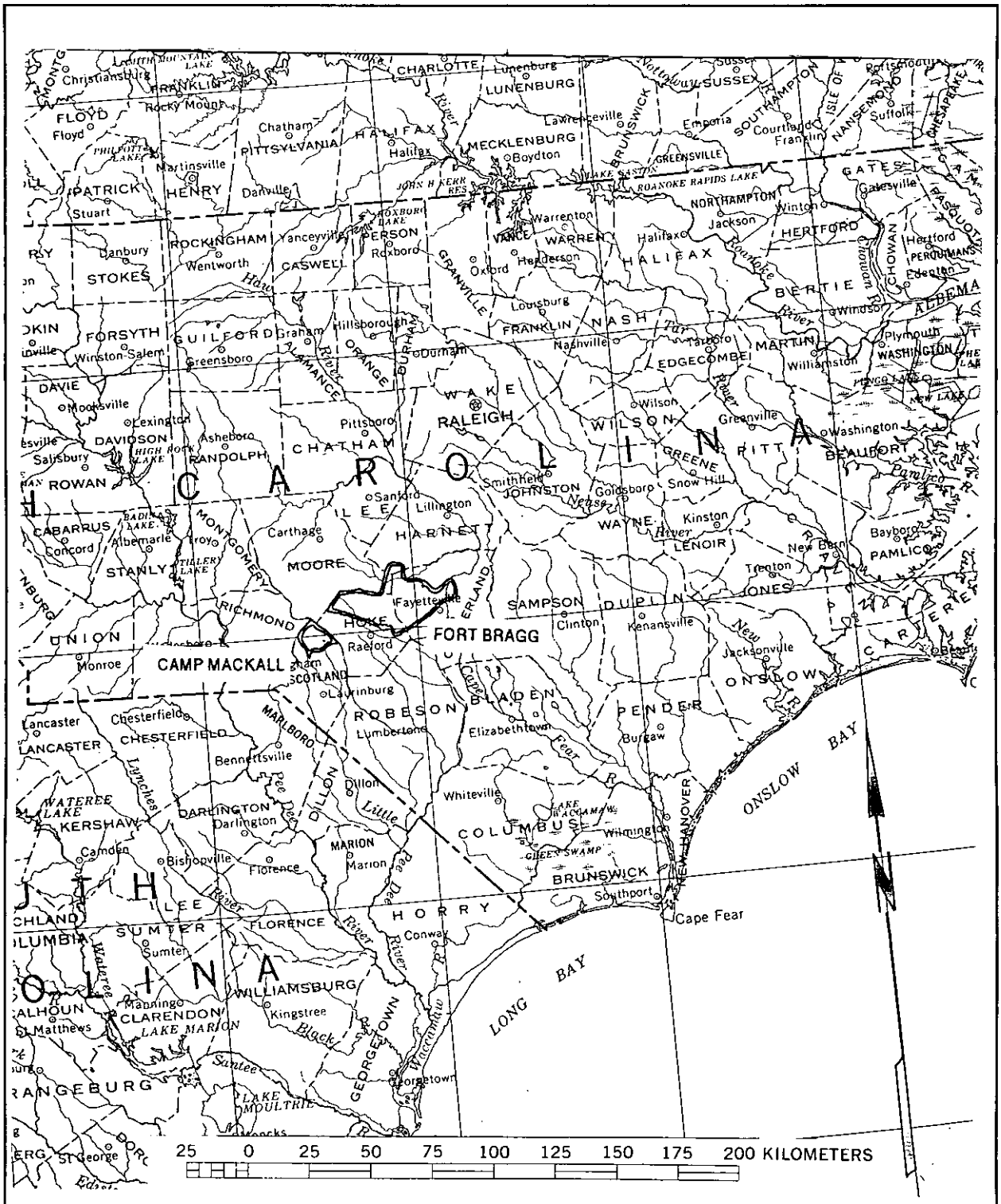


Figure 1. Location of the project areas in North Carolina (USGS United States 1972 1:250,000).

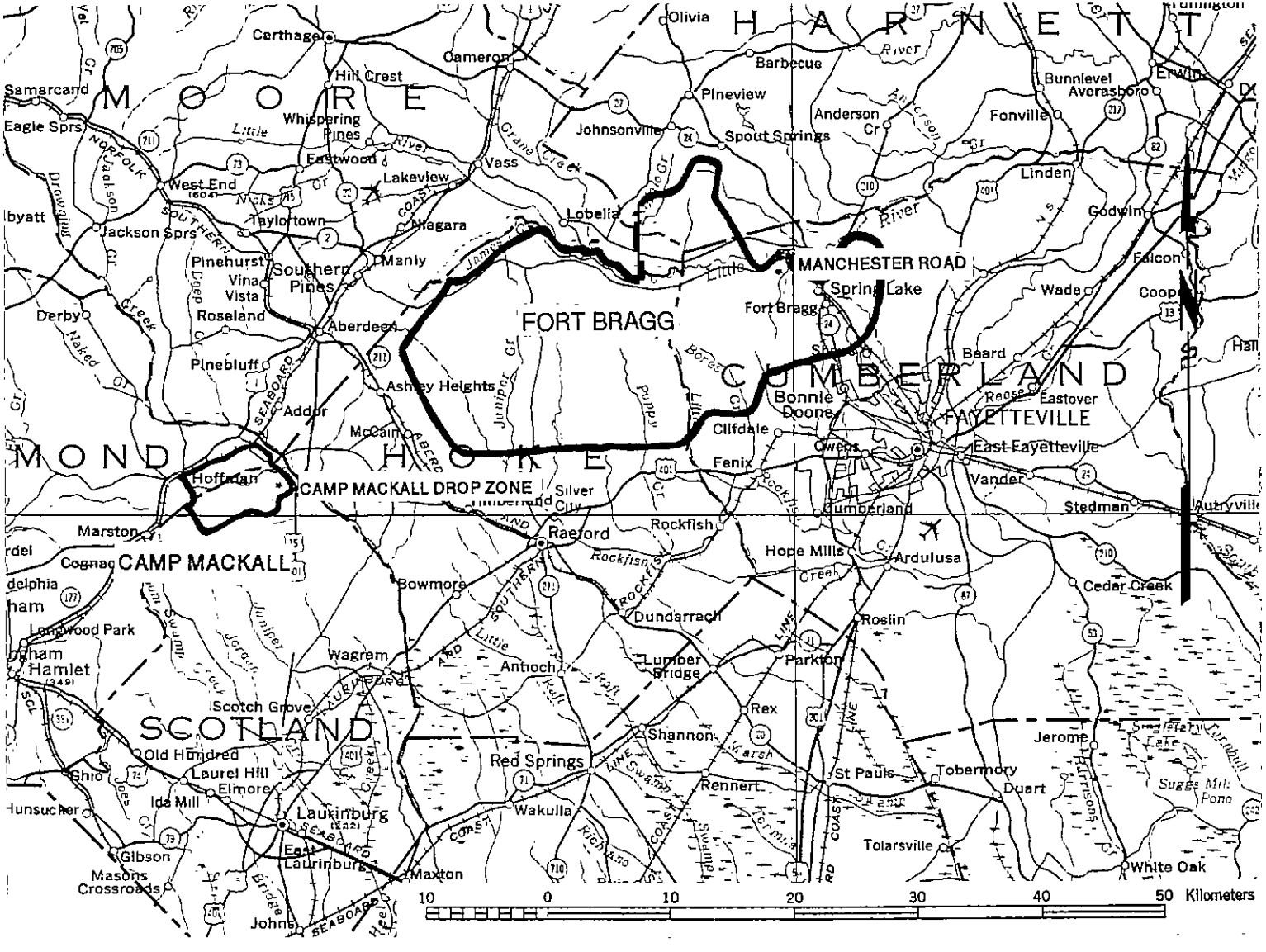


Figure 2. Location of the Camp Mackall Drop Zone and the Manchester Road tract in Scotland and Cumberland counties, North Carolina.

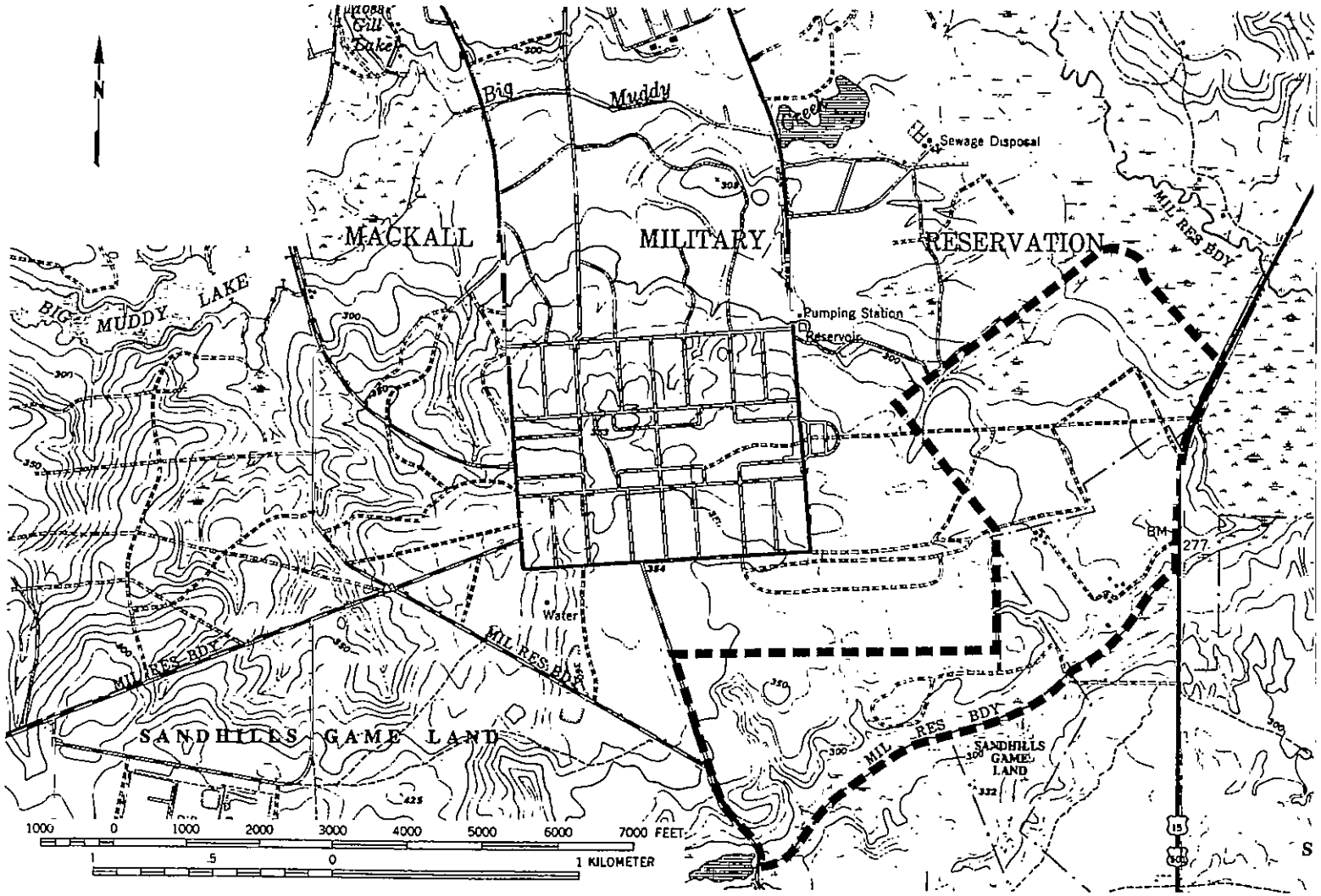


Figure 3. Camp Mackall Drop Zone survey area (Pinebluff USGS 7.5' topographic map 1:24,000).

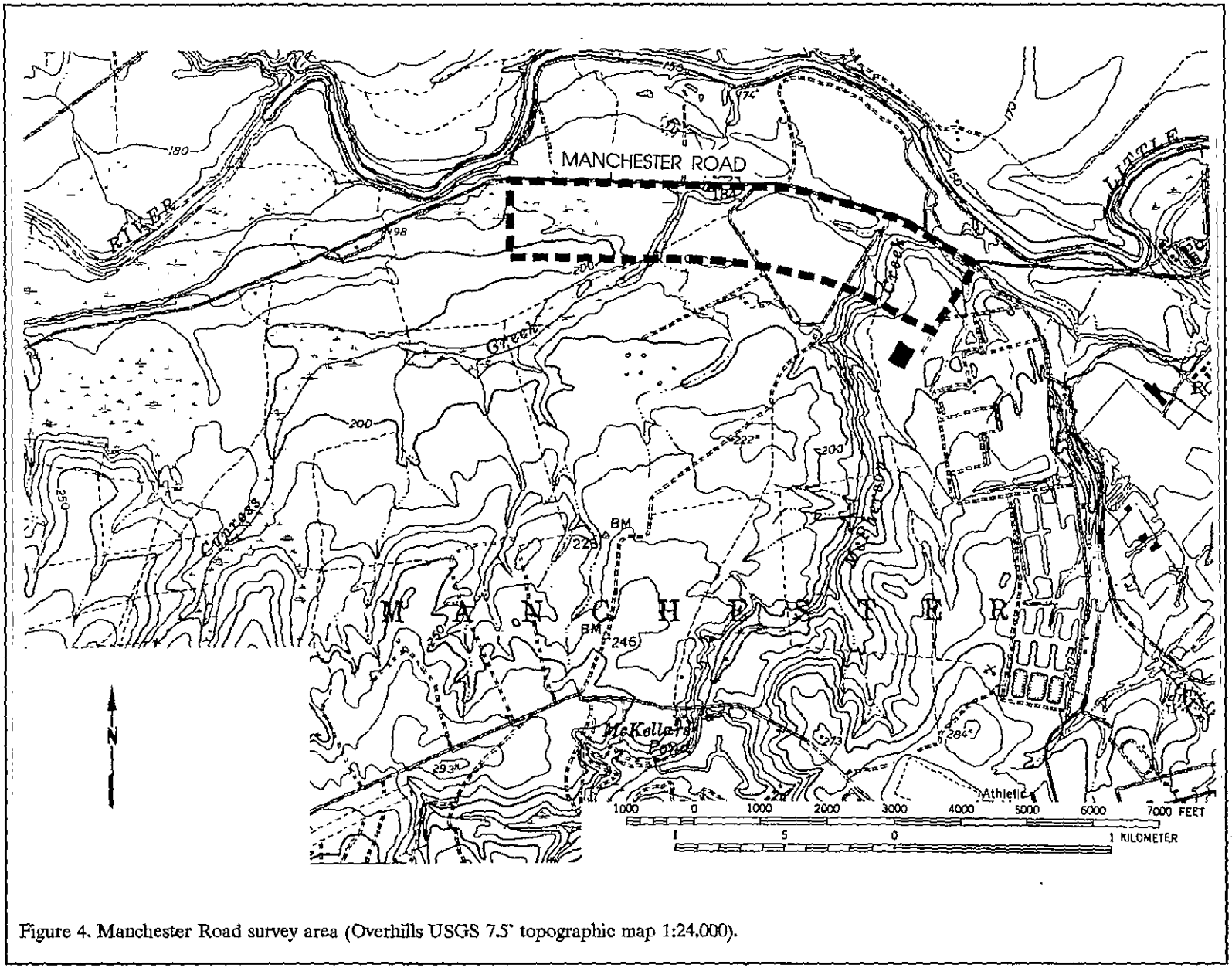


Figure 4. Manchester Road survey area (Overhills USGS 7.5' topographic map 1:24,000).

Figure 5. Portion of the Green Property in the Camp Mackall Drop Zone, view to the west.

Figure 6. Area of the Manchester Road survey tract, view to the north showing general topography and vegetation.

States Geological Survey maps, are in feet.

These investigations incorporated a review of the site files at the North Carolina Office of State Archaeology. A total of 16 previously recorded prehistoric archaeological sites were identified by Dr. Thomas Loftfield (1979) as a part of a reconnaissance survey of Fort Bragg, Camp Mackall, and Simmons Army Air Field. Additional information concerning this previous survey, and the sites identified by Loftfield, can be found in the **Research Strategy and Methods** section, as well as the **Conclusions**. In addition, the fort's Historic Preservation Plan (Braley 1990) and Loftfield's (1979) reconnaissance study were consulted regarding sites or structures on the National Register of Historic Places within both survey tracts. None were recorded. Background research was conducted at the North Carolina Office of State Archaeology and published reports and the preservation plan were consulted regarding previous research at Camp Mackall and Fort Bragg.

Prehistoric and historic sites were located in both survey areas. A total of 15 sites and four isolated occurrences were identified within the Camp Mackall Drop Zone survey tract (Figure 3). Two sites and one isolated occurrence were discovered in the Manchester Road survey tract (Figure 4). Of the archaeological sites identified, only one, 31SC88, is recommended as potentially eligible for inclusion on the National Register of Historic Places. The remaining 21 sites are recommended as not eligible and no further management activities are necessary. The Base Archaeologist, however, may wish to continue collecting these deflating sites using the previously established collection strategy for consistency.

All 19 of the sites from the Camp Mackall Drop Zone survey contained prehistoric components, including Early Archaic (even possible Paleoindian) through Woodland materials. The most common Woodland component was Yadkin, recovered as Yadkin pottery from six of the 19 sites on Camp Mackall. Less common, but still encountered, were small assemblages of Middle Woodland Hanover ware and what appears to be Adam's Creek pottery, characteristic of the Tuscarora on the southern coast. The most common Archaic Period component was Morrow Mountain, found on four of the 19 sites. The one site recommended as potentially eligible, 31SC88, was identified in Camp Mackall and was found to contain eight different components, including Hardaway, probable Big Sandy, Kirk, Morrow Mountain, Guilford, Gypsy, Caraway, and Yadkin.

The Manchester Road survey tract, which produced only three sites, included one small site which yielded only historic material, while the other two were characterized by non-diagnostic prehistoric materials.

All of the historic components, identified from four sites in the Camp Mackall survey area and one from the Manchester Road survey, are indicative of the mid-nineteenth through mid-twentieth century period.

Surveys were conducted from March 13, 1996 to March 23, 1996. The Principal Investigator was Dr. Michael Trinkley. The Field Director for the project was Mr. William B. Barr. Field crew consisted of Mr. Ian Hamer, Ms. Martha Houston, Ms. Michelle Jones, Mr. Hollis P. Lawrence, Mr. Troy O. Martin, Ms. Rozanna Pfeiffer, Mr. Shawn T. Small.

## Curation

Archaeological site forms have been filed with the North Carolina Office of State Archaeology. The field notes, photographic materials, artifact catalogs, and artifacts resulting from these investigations have been curated at Fort Bragg using their accessioning and cataloging system. All records and duplicate copies have been provided to Fort Bragg and will be maintained by that institution in perpetuity.

# NATURAL SETTING

## Physiography and Drainage

Fort Bragg, which encompasses about 60,000 ha, forms a roughly rectangular shape measuring about 19 km north-south by about 44 km east-west. The fort's most distinctive feature is perhaps its diversity of relief. Elevations range from about 63 meters in the west to about 155 meters in the northeast along Gibson Creek. Scattered across the base are several "hills" about 30 meters higher than the surrounding topography. Loftfield observes that the extremes in topography "have been exaggerated by an erosive process on the sandy soils along the numerous streams" (Loftfield 1979:3).

Camp Mackall is a subinstallation of Fort Bragg situated about 64 km west of the main base. Camp Mackall is roughly square in shape and encompasses about 3,200 ha. It is bounded to the east by Drowning Creek. to the southeast by US 15/501, to the south by South Range Road and Beaver Dam Creek, to the west by Tuckers Road, and to the north by the right-of-way for the Seaboard Coastline Railroad. The camp is about evenly divided between Richmond County to the north and Scotland County to the south.

The drainage pattern of the Fort Bragg area (well illustrated by Loftfield [1979:Figure 1]), consists of a number of relatively small streams and creeks flowing either north or south from an east-west ridge that runs through the center of the Fort Bragg reservation. Those to the south flow into the Cape Fear River, while those to the north flow into the Lower Little River (which itself empties into the Cape Fear). Rockfish Creek, the headwaters of which originate on Fort Bragg, serves as the major drainage for the creeks in the western portion of the base (Figure 7). Camp Mackall is drained by Big Muddy Creek, which flows west to east through the center of the facility, flowing into Drowning Creek, which forms the Camp's eastern boundary. Long Branch Creek flows from the northwestern quadrant of the Camp southeastwardly to Big Muddy Creek. Beaver Dam Creek flows northeastwardly, also draining into Drowning Creek.

Both Camp Mackall and Fort Bragg are situated entirely within the Sandhills physiographic province — a narrow band of ancient marine sediments sandwiched between the Coastal Plain, about 18 km to the southeast, and the Piedmont, about 50 km to the northwest. Almost every previous study on the base mentions that the Sandhills seem to be a favorite location for military installations (such as Fort Jackson, S.C. and Fort Gordon, Georgia) — the land being cheap, and the climate and topography offering the potential for year-round use.

The 230 ha Camp Mackall Drop Zone survey tract is located in northwestern Scotland County, North Carolina. The 70 ha Manchester Road survey tract is entirely located within northern Cumberland County, North Carolina. Both survey areas, like the remainder of the bases, are situated in the Sandhills region of the Upper Coastal Plain physiographic region and are located in the south central portion of North Carolina. Scotland county is bounded to the northeast and east by Hoke County, to the east and southeast by Robeson County, to the southwest by Marlboro County, South Carolina, to the west and northeast by Richmond County, and to the north by Moore County. Cumberland County is bounded to the north by Harnett County, to the east by Sampson County, to the south by Bladen County and to the southwest by Robeson County, and to the west by Moore and Hoke Counties.

The topography of the two counties consists of gently undulating hills with elevations ranging from about 250 to 500 feet above sea level. The Sandhills are characterized by broad, sandy ridges and long, less sandy sideslopes (Hudson 1984:2). The most prominent topographic feature

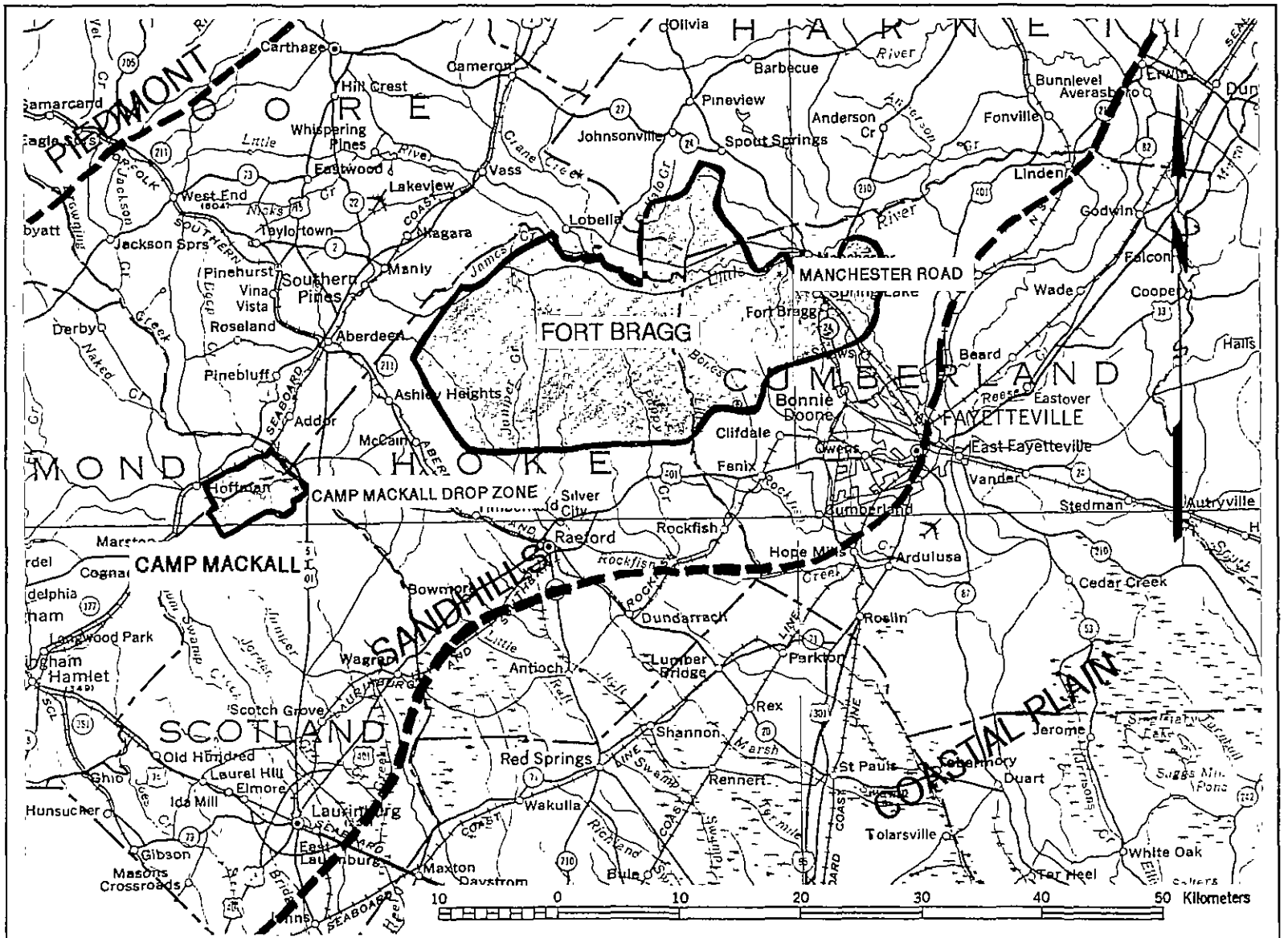


Figure 7. Physiographic setting of Fort Bragg and Camp Mackall in the Sandhills and the location of the two survey tracts.

within the Camp Mackall project area consists of a large east-west oriented sandy ridge. Elevations drop somewhat sharply on either side of the ridge to Drowning Creek to the north and Beaver Dam Creek to the south. The Manchester Road survey tract is bordered to the north by the Lower Little River tributaries of Deep Creek to the west. The elevations in the study area range from 77 to 117 m above sea level.

The northern portion of Scotland County is drained by Drowning Creek which flows into the Lumber River. A number of creeks, Little Shoe Heel Creek, Juniper Creek, and Jordan Creek drain the central portion of the county, all flowing southeast into Shoe Heel Creek. The southern portion of the county is drained by Gum Swamp Creek.

The northern portion of Cumberland County is drained by the Lower Little River which drains into the Cape Fear River. The central portion of the county is drained by a number of small creeks. To the north, Carvers Creek, Cross Creek, and Little Cross Creek drain directly into the Cape Fear River. To the south, Stewarts Creek drains into Beaver Creek. Bones Creek, Beaver Creek, and Buckhead Creek all drain into Rockfish Creek which flows east to the Cape Fear River. The South River forms the western boundary of Cumberland county. According to the State Board of Agriculture:

> [t]hrough the pine lands run numerous bold, strong and swiftly flowing streams, never diminished by drought and rarely excited by freshet. These, from the earliest settlement, furnished convenient mill-sites, and originated that active lumber industry so stimulating to the prosperity of the county and that the towns on the Cape Fear river; and, up to the successful introduction of cotton manufacture into the State, their power was speedily applied to the use of cotton-mills, which were built in the town of Fayetteville, on Cross and Blount's creek, on Buckhead, Beaver Dam and Rockfish (two of these) creeks, and on Lower Little River; and on all of these there are now large and flourishing cotton factories (State Board of Agriculture 1896:327).

Since the majority of the Camp Mackall survey tract has been clear cut for fields on the Green property and the Camp Mackall Drop Zone, there have been some changes in the original physiography and drainage of the area. The topography of hills and drainages in the tract have become less sharp and more gentle. It is possible that some sites, which today are found far from flowing water, had creeks or springs which flowed much closer to the site. A good example is 31SC75 which was occupied from the Middle Archaic to the Woodland. The site is located on a small terrace adjacent to a drainage rim. Today, flowing water, Drowning Creek, is located about 1,400 m to the north. Given the density and length of occupation at 31SC75, it is likely that a source of water was located closer to the site. Figure 8 shows the silted in and overgrown drainage adjacent to the site.

The Manchester Road survey tract is heavily wooded. The principal source of water, McPherson Creek, meanders throughout the eastern portion of the area. The Cypress Creek drainage extends into the central area of the survey tract. The western boundary contains a low unnamed drainage. The closest large body of water, the Lower Little River, flows approximately 550 m to the north.

## Geology and Soils

Hudson (1984:2) describes the geology of the area simply as several layers of unconsolidated sediment (primarily of the Tuscaloosa Formation, deposited in the Upper Cretaceous period) underlain by bedrock which is composed of volcanic slate. This bedrock is generally 62 to 125 m below surface; however, near the town of McCain (just west of Fort Bragg), bedrock is found at about 34 m below surface. No bedrock is known to be exposed anywhere in either county or project

area.

Immediately available lithic resources consist of river pebbles that are of a relatively high quality quartz and found in gravel bars of the Lower Little River (just north of the Manchester Road survey tract) and the larger tributaries. Metavolcanic rock does not outcrop on Fort Bragg. However, there is a source located a relatively short distance away, about 16 km, on the Hoke-Moore county line (North Carolina Department of Conservation and Development 1958). Even greater numbers of resources are available in the Slate Belt, just within the Piedmont. Igneous rocks within the Slate Belt include rhyolite, andesite, and intrusive quartz veins.

Figure 8. Filled-in drainage at 31SC75, view to the north.

Traditionally the soils of Scotland and Cumberland counties have been identified as Norfolk-Ruston and Norfolk Sands (U.S. Department of Agriculture 1939:1069-1072). The Norfolk-Ruston soils were associated with the Coastal Plain, while the Norfolk Sands were associated with the Sand Hills. In neither area has climate favored the development of organic matter, so the soils are light-colored, predominantly sandy in the surface horizon, and range from coarse sands to fine sandy loams. Almost all are medium to strongly acid in reaction.

Today, modern soil science identifies five primary soil associations in Scotland County and 10 primary soil associations in Cumberland County. The Lakeland-Gilead Association is the only one associated with Camp Mackall. These excessively drained soils are located mainly on broad ridgetops, gentle toe slopes, and side slopes (Horton 1967). Two are associated with Fort Bragg — the Blaney-Gilead-Lakeland Association and the Wagram-Faceville-Norfolk Association. The former is characterized by excessively drained to moderately well drained soils on highly dissected uplands while the latter is characterized by well drained to poorly drained soils found on broad, smooth uplands (Hudson 1984).

The Camp Mackall Drop Zone survey tract in Scotland County is characterized by Alluvial, Blaney, Chipley, Eustis, Gilead, Kenansville, Lakeland, Plummer, Portsmouth, Swamp, and Wagram soils (Horton 1967:6-21). The most prominent soil type in the northern portion of the survey tract is Swamp bordered to the south, in areas, by well drained Blaney loamy sand, excessively drained Lakeland sand, poorly drained Plummer sands and loamy sand, very poorly drained Portsmouth fine textured soil, and well to excessively well drained Wagram loamy sand. The central portion of the survey tract contains very

poorly drained and wet Alluvial loamy sand, or silt, with moderately well drained Chipley sand, somewhat excessively drained Eustis sand, well drained or somewhat excessively drained Kenansville sand, as well as Lakeland and Portsmouth soils. The southern portion contains primarily Lakeland soils, in association with Alluvial and well drained Gilead sand.

The soils in the Fort Bragg survey tract are characterized by Blaney, Bragg, Gilead, Kalmia, Lakeland, and Woodington soils. The most prominent soil type in the western section is well drained Blaney sand, with a small pocket of poorly drained Woodington loamy sand to the north. The eastern section is primarily composed of moderately well drained Gilead loamy sand with a small pocket of well drained Bragg sand to the southeast.

Since the effects of erosion and soil deposition characteristics are important in determining site probability, typical soil profiles, as described by Horton (1967) and Hudson (1984), are briefly discussed below. The occurrence of these soils in the survey tracts are also shown in Figures 9 and 10.

The **Blaney Series,** characterized by Blaney loamy sand with a 2 to 8% slope, exhibits an A (or often Ap) horizon about 10 cm in depth consisting of dark grayish brown (10YR4/2) loamy sand. From 10 cm to a depth of 64 cm is an E horizon of light yellowish brown (2.5YR6/4) loamy sand. The underlying Bt1 horizon, to a depth of 87 cm, is a hard and compact brownish yellow (10YR6/6) sandy clay loam. Below this, to 1.58 m, is the Bt2 horizon of reddish yellow (7.5YR6/6) sandy clay loam. The C horizon, typically identified at the base of the Bt2 soil, is a yellow (10YR7/6) loamy coarse sand. The Blaney soils have some of the higher soil erodibility factors present (ranging from .15 to .28).[1]

The **Bragg Series** consists of well drained soils that have a 1 to 4% slope. Bragg soils exhibit a recursive A horizon with multiple C horizons. The Ap horizon, about 15 cm in depth, is a strong brown (7.5YR5/8) sandy loam. From 15 cm to a depth of 50 cm is a C1 horizon of strong brown (7.5YR5/8), grayish brown (10YR5/2), and gray (10YR6/1) sandy clay loam. The underlying C2 horizon, to a depth of 75 cm, is a reddish yellow (7.5YR6/8) sandy clay loam with common medium light gray (N7/0) clay bodies and strata. Below this, to 1.0 m, is a C3 horizon of light yellowish brown (10YR6/4) sandy clay with common medium distinct red (2.5YR5/8) mottles. The C4 horizon, which extends to 1.22 m below surface, contains a reddish yellow (7.5YR6/8) sandy clay loam that has common medium distinct light gray (N7/0) clay bodies. The C5 horizon runs to 1.40 m and contains a yellowish red (5YR5/6) sandy clay loam with common medium distinct brownish yellow (10YR6/8) mottles. The C6 horizon extends to 1.80 m and contains light red (2.5YR6/8) sandy clay with common medium distinct reddish yellow (7.5YR6/8) mottles. The recursive A horizon occurs between 1.80 m and 1.90 m. These soils contain a very dark gray (N3/0) loamy sand. Below this is an Eb horizon, which runs to 2.0 m in depth, and consists of a brown (10YR4/3) loamy sand.

The **Chipley Series** soils are formed in coarse-textured sediments and are listed as sand to a depth of more than 1.0 m. These soils typically have a Ap horizon of dark gray (10YR4/1) loamy sand which extends to 18 cm. There is usually no B horizon, although a C1 horizon of very pale brown (10YR7/3) sand with a few fine, distinct streaks of brownish yellow (10YR6/6) sands may be found extending from 18 to 60 cm. The C2

[1] The soil erodibility factor (expressed as K) used in the universal soil loss equation is a measure of the susceptibility of soil particles to detachment and transport by rainfall and runoff. It basically indicates the susceptibility of a soil to water-induced erosion. The soil loss tolerance factor (T), sometimes called the permissible soil loss, is more often used to help quantify wind-induced erosion. This factor is expressed as the maximum rate of soil erosion that will still permit a high level of crop productivity. It is therefore somewhat less useful in these discussions. Regardless, all of the discussed soils in the Camp Mackall project area have the maximum T rating of 5, or 5 tons of soil per acre per year.

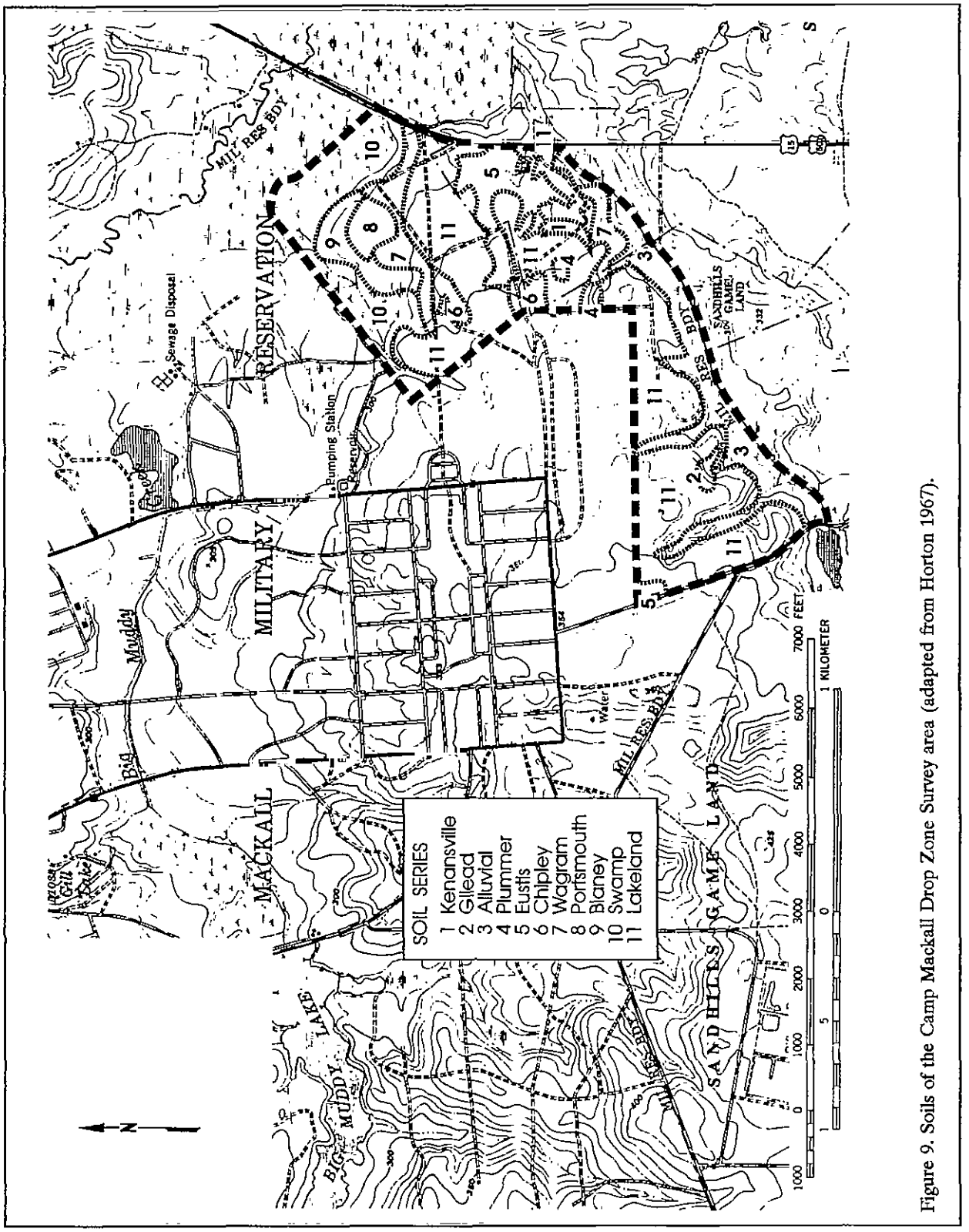


Figure 9. Soils of the Camp Mackall Drop Zone Survey area (adapted from Horton 1967).

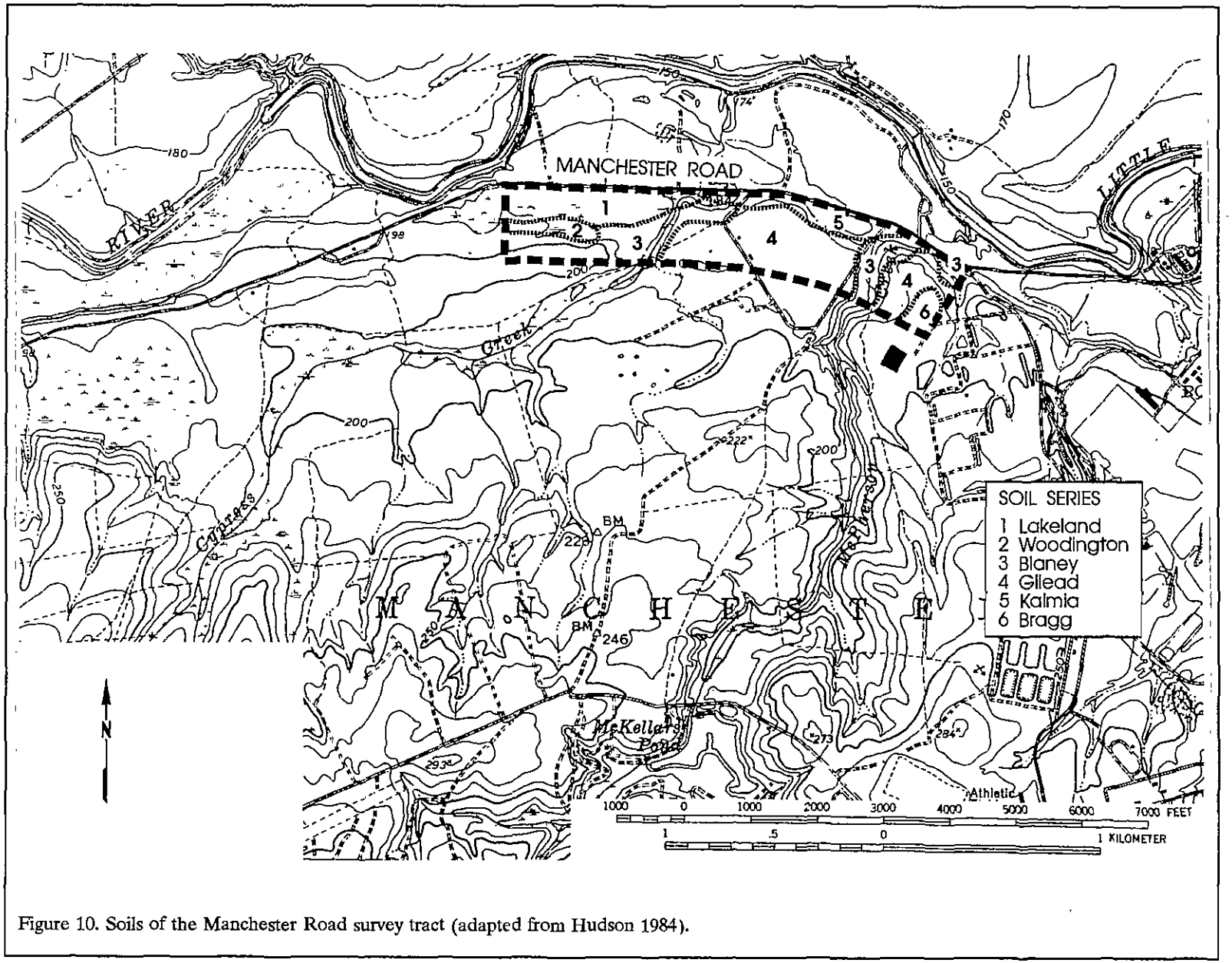


Figure 10. Soils of the Manchester Road survey tract (adapted from Hudson 1984).

horizon, which reaches a depth of 1.20 m, is a pale yellow (2.5Y 7/4) and light gray (2.5Y 7/2) sand with a few fine streaks of brownish yellow (10YR6/6).

The **Eustis Series** are somewhat excessively drained sands on slopes of 0 to 6%. These soils generally have an Ap horizon of grayish brown (10YR5/2) sand that runs to 20 cm in depth. An A2 horizon extends to 50 cm in depth and is a pale brown (10YR6/3) sand. This overlays a Bt horizon of strong brown (7.5YR5/8) loamy sand to approximately 1.0 m. The C horizon goes to 1.5 m in depth and is a reddish yellow (7.5YR6.6) sand.

The **Gilead Series** are moderately well drained soils with slopes that range from 2 to 25%. The upper 10 cm consists of an A horizon that is dark gray (10YR4/1) loamy sand. Below, to a depth of 33 cm, is an E horizon consisting of light yellowish brown (10YR6/4) loamy sand. The Bt1 horizon extends to 53 cm and is a brownish yellow (10YR6/6) sandy clay. The Bt2 horizon runs to 80 cm in depth, It consists of mottled strong brown (7.5YR5/6), brownish yellow (10YR6/6), and light gray (10YR7/2) sandy clay and sandy clay loam. The BC horizon appears between 80 cm and 1.70 m below surface and contains a reddish yellow (7.5YR6/6) and light yellowish brown (10YR6/4) sandy loam.

The **Kalmia Series** consists of well drained soils in association with a 0 to 2% slope. The Ap horizon reaches a depth of 23 cm and is a dark grayish brown (10YR4/2) loamy sand. An E horizon follows to a depth of 35 cm and is a light yellowish brown (2.5Y6/4) loamy sand. A Bt horizon underlays the E horizon. Extending to 85 cm this is a yellowish brown (10YR5/6) sandy clay loam. Below this is a C1 horizon of light yellowish brown (2.5YR6/4) loamy sand with lenses of gray (10YR7/1) sand with mica. The C2 horizon is a brownish yellow (10YR6/6) sand which extends to approximately 2 m in depth.

The **Kenansville Series** are well drained soils with a slope of 0 to 3%. The Ap horizon extends to 20 cm and is a grayish brown (10YR5/2) loamy sand. Below this is an E horizon, extending to 60 cm, which contains a very pale brown (10YR7/3) loamy sand. This is overlying a Bt horizon, which is found to 98 cm below the surface, of yellowish brown (10YR5/6) sandy loam. This is followed by a BC horizon of yellowish brown (10YR5/4) loamy sand extending to 1.25 m. A C1 horizon, of brownish yellow (10YR6/6) sand, extends to 1.55 m. The C2 horizon runs to 1.78 m and consists of white (10YR8/2) sand. The C3 horizon runs to 2.0 m and consists of light gray (10YR7/1) sand.

The **Lakeland Series**, formed in the uplands and consisting of excessively drained soils, will typically have a profile with Ap soils, usually dark gray (10YR4/1) sand, to 15 cm. Below the Ap soils, to a depth of 38 cm, is the C1 horizon characterized by yellowish brown (10YR5/6) sand. The C2 horizon, to a depth of 1.12 m, consists of strong brown (7.5YR5/8) sand. This is replaced by the reddish yellow (7.5YR6/8) sand typical of the C3 horizon to a depth of 1.33 m. Underlying this is the B4 horizon, composed of brownish yellow (10YR6/6) sand, to a depth of 1.59 m. Below this, to 2.10 m, is the C5 horizon of yellow (10YR7/6) sand. Pockets of white sand are not uncommon in this below a depth of about a meter.

The **Plummer Series** consists of poorly drained sand or loamy sand which forms in generally level areas and drainages. This series typically contains multiple A horizons. The Ap horizon is a dark gray (10YR4/1) loamy sand which extends to 18 cm below surface. This is followed by an A21g horizon to 95 cm of gray (10YR5/1) loamy sand to sand. The A22g horizon is a light gray (10YR7/1) loamy sand and is 1 m in depth. The A horizons are followed by a Btg horizon of light gray (2.5Y7/2) sandy loam with common, medium, distinct mottles of brownish yellow (10YR6/6) and light yellowish brown (10YR6/4) sand.

The **Portsmouth Series** has very poorly drained soils in near-level areas and in slight depressions. The A1 horizon is 25 cm in depth and is a black (10YR2/1) loam. This is followed by multiple B horizons. B1g is a dark gray (10YR4/1) and gray (10YR5/1) sandy loam which extends to 30 cm below surface. The B2tg horizon of gray (10YR6/1) sandy clay loam runs to 70 cm in depth.

The B3g horizon is 1.25 m below surface and is a gray (10YR6/1) sandy clay loam with few fine distinct mottles of brownish yellow (10YR6/6) sandy loam and loamy sand. The B horizons are followed by a Cg horizon which runs to 1.5 m in depth and is a gray (10YR6/1) sandy loam.

Figure 11. This photograph illustrates the loss of soil in the Camp Mackall area during the common windstorms.

The **Wagram Series** contains well drained soils that have slopes which range from 0 to 15%. The Ap horizon extends to a depth of 20 cm and is a grayish brown (10YR5/2) loamy sand. This is followed, to 60 cm, by an A2 horizon of pale brown (10YR6/3) loamy sand with common medium faint yellowish brown (10YR5/4) mottles. The B1 horizon extends 68 cm and consists of yellowish brown (10YR5/8) sandy loam. This overlays a B21t horizon, extending to 95 cm and containing a yellowish brown (10YR5/8) sandy clay loam with common medium prominent red (2.5YR4.6) and common medium distinct strong brown (7.5YR5/6) mottles. A B22t horizon extends to 1.30 m and contains a yellowish brown (10YR5/8) sandy clay loam along with common medium distinct red (2.5YR4/6), few medium distinct light brownish gray (10YR6/2), and common medium faint light yellowish brown (10YR6/4) mottles. The B3 horizon runs to a depth of 1.88 m and is a yellowish brown (10YR5/6) sandy clay loam. The C horizon extends to over 2 m in depth and is a yellowish brown (10YR5/6) sandy loam.

The **Woodington Series** consist of poorly drained soils with a slope of less than 2%. The A horizon extends to 13 cm in depth and contains a very dark gray (10YR3/1) loamy sand. This overlays an E horizon, which runs to 28 cm, of grayish brown (10YR5/2) loamy sand. A Btg horizon extends to 70 cm and consists of gray (10YR6/1) sandy loam with few medium distinct yellowish brown (10YR5/6) mottles. This overlays a BCg1 horizon, which runs to 93 cm in depth, and is characterized by gray (10YR6/1) loamy sand with few fine distinct yellowish brown (10YR5/6) mottles. Below this is a BCg2 horizon, which extends to 1.63 m in depth, of gray (10YR6/1) loamy sand.

Although this is a very small sample, all of the prehistoric sites were found on well drained soils (specifically Lakeland and Gilead series). The historic sites also occur on well drained soils. All of the sites, prehistoric and historic, found in the Camp Mackall project area occur on Lakeland soils. Within the Fort Bragg survey tract all sites were found to occur on moderately well drained Gilead loamy sands. Although this may suggest that prehistoric Indians and historical farmers preferred to occupy the well drained sandy soils, it is probably more a matter of soil type availability than preference.

Typically, the Sand Hills region experiences relatively little erosion. In undisturbed areas 0.012 t of soil loss per ha per year has occurred. Logged areas experience about 0.319 t of soil loss per ha per year. The most destructive erosional situation described by the United States Department of Agriculture (1980:25) are logging roads where erosion consists of 22.46 t of soil loss

per ha per year. Similar to pervious studies conducted at Sicily Drop Zone (Trinkley et al. 1996), where it is estimated to have lost 291.8 tons of soil per ha per year through water and wind erosion (John Ray, personal communication 1995), the same may be true of the Camp Mackall survey tract (Figure 11). This erosion has possibly caused a great deal of damage to the extant archaeological resources in this area.

## Climate

North Carolina is part of the warm temperate zone, characterized by what might be called a placid climate, with local variations due partially to the tremendous range in elevation from the mountains to the coast. Centrally located Hoke County is generally hot and humid in the summer because of the moist, maritime air. The winters are moderately cold but short since the mountains to the west protect the area from many cold waves. The average winter temperature in nearby Fayetteville is 6°C. In the summer the average daily temperature is 26°C in Fayetteville. In general, spring comes earlier to the Sand Hills than to the adjacent Piedmont since the loose, well-drained soils can warm more rapidly. This benefit, however, is coupled with the general dryness of the soils. The total annual precipitation is 1.07 m. Of this, 60% usually falls in April through September, which includes the growing season for most crops (Hudson 1984:2; see also Reed 1936).

During the late Pleistocene and early Holocene periods temperatures were considerably cooler than they are today. Temperatures began to moderate and approach modern temperatures around 7,000 B.P. along the Southeast Atlantic Slope (Wright 1976:594). A more thorough discussion is provided below relating vegetational change to these climatic ranges.

## Floristics and Paleoenvironment

The Sandhill Province is dominated by longleaf pine and various xeric oaks such as post oak, Margaret's oak, bluejack oak, and turkey oak. In addition, much of the overstory vegetation includes sweetgum, beech, southern red oak, mockernut hickory, and southern sugar maple (Barry 1980:139-140; Gade and Stillwell 1986). This, in general, adequately characterizes the vegetation of Camp Mackall and Fort Bragg. Loftfield observed that the vast majority of the post consisted of, "droughty sandy upland habitat longleaf pine (*Pinus palustris*), turkey oak (*Quercus laevis*), with a ground cover of wire grass (*Gaylussacia dumosa*)" which was being kept in balance by periodic controlled burns (Loftfield 1979:9).

The Camp Mackall project area presents a somewhat different view, being almost totally denuded. In the wooded fringe area vegetation consists of longleaf pine and the various xeric oaks. There is very little overstory vegetation, and where it is found it consists primarily of pine. Ground cover, where it occurs, consists of wiregrass.

In the 1860s only about 10% of what would later become Hoke County was improved for cultivation (Hilliard 1984:Map 44), while by the 1940s about 25% of the county was cropped with around 70% being forested (Cruikshank 1944:11-12). Only about 7% of Fort Bragg, however, was being cultivated prior to its purchase by the military in the second decade of the twentieth century. Cotton and corn were historically produced on the bottomlands, while the rolling sandy uplands were dominated by smaller farms producing grains and fruits. The area, before the Civil War, was the site of experiments in the production of tea (State Board of Agriculture 1896:327).

Pollen cores obtained from the Southeastern Coastal Plain indicate a sequence of successional forest types from the Full Glacial through the Post Glacial periods (Watts 1971; Whitehead 1965). Prior to strong evidence of human population (pre-15,000 B.P.), cold-adapted vegetation, predominately spruce and jack pine, was found in the Piedmont and Coastal Plain area. Other less common species included oak and ironwood. All of these species suggest a much colder and drier environment than found today (Watts 1980:326). Some have suggested that this climate was much like today's eastern Canadian boreal forests, dominated by pine and spruce distributed in a mosaic pattern of stands within

sedge-dominated prairies. There is evidence for parabolic dune formations during the Full Glacial period as derived from sediments from the Pee Dee River. These dune fields are also present north of the Cape Fear. This arid phase is also evidenced in the pollen record of Singletary Lake where there is an increase in the sand fraction during this period (Whitehead 1973; Claggett and Cable 1982).

The somewhat warmer and moister environment evidenced in the Late Glacial (15,000 to 10,000 B.P.) is associated with an increase in deciduous species. Northern hardwoods, such as oak, hickory, beech, birch, and elm began replacing the spruce and jack pine populations. This change corresponds with warmer summer temperatures and colder winter temperatures, as well as an increase in precipitation. It is during this period that the first moderately well documented evidence for human occupation occurs (Watts 1980; Sassaman et al. 1990:21). This period was also a transitional period between the glacial Late Pleistocene and the essentially modern climatic conditions of the Holocene. The resulting mesic forest, with its relatively high percentages of beech and hickory, has no modern analog and was the result of the cool, moist conditions which characterized this transition.

During the Post Glacial (10,000 B.P. to present) oak and hickory dominated the region. Other species such as walnut, hemlock, and hazelnut disappeared from the pollen record. By 9,500 B.P. hickory and ironwood species declined and were replaced by sweetgum and blackgum. These changes prior to 7,000 B.P. suggest periods of rapid warming and increased moisture (Watts 1980; Watts and Stuiver 1980). It has been observed that these very rapid environmental changes would have created a dynamic ecosystem requiring constant adaptive adjustments on the part of early groups (Cable and Mueller 1980:7).

In the Sandhills region southern pine communities displaced the oak-dominated forests between 8,000 and 6,000 B.P. which led to a decrease in nut mast production (Sassaman et al. 1990:22). This vegetational change probably had an effect on prehistoric land use during certain times of the year, since nut masts were probably more isolated and concentrated rather than widespread. Coupled with these vegetational changes was a cooler, moister climate (Watts 1971 and 1980).

Brooks et al. (1986) suggest that not only latitude, but also elevation affected when vegetational changes occurred. As a result, broad environmental changes probably occurred first in the Coastal Plain.

From about 5,000 B.P. and continuing to the present, Whitehead (1973) found pine increasing slightly, although oak appeared to remain dominant in natural forest stands. The precontact environment of the Piedmont Southeastern United States was termed "temperate deciduous forest" by Shelford (1974:56-88) with oak and hickory interspersed with pine, maple, ash, and other deciduous species (for a graphic representation see Shantz and Zon 1936). Küchler (1964) identifies the "potential natural vegetation" of the Fort Bragg area as that of the Southern Mixed Forest, surrounded by the more common Oak-Hickory-Pine Forest. Küchler's forests represent what would "exist today if man were removed from the scene and if the resulting plant succession were telescoped into a single moment" (Küchler 1964:2). The result for the project area would be tall forests of broadleaf deciduous and evergreen and needleleaf evergreen trees. The dominants would include beech, sweet gum, southern magnolia, slash pine, loblolly pine, white oak, and laurel oak. Hickories would occur as minor components, along with dogwood and hollies.

By the historic period the Sand Hills were dominated by loblolly pine. Although the name means, literally, "mud puddle," and was likely applied since the tree grew on wet soils, the loblolly is also known as the "bull pine" because of its prodigious size and remarkable ability to invade dry, flat terrain and even the hilly uplands. The pines formed vast, open forests interrupted only by the occasional inland swamp and its accompanying hardwoods.

The Sand Hills, their soil, and their vegetation frequently attracted the attention of

observant commentators. One, Edmund Ruffin, remarked in 1843 that:

> the land hereabouts is barren, or but triflingly productive. The middle grounds between the rivers are the highest, and consequently the most barren . . . . Their soil is of so sterile a nature, that in many places it produces no grass to cover it; and the tracks of any animal passing over it, are discernable, as if they had been upon snow. The low grounds among these hills are either extensive swamps and bays, or narrow valleys, into which, the mould from the adjacent high lands have been deposited by the rains which run down their sides. Hence they become suitable for agriculture and pasturage, and are principally those places, near which settlements are effected (Mathew 1992:4).

On another occasion Ruffin commented:

> the soil is of deep sand & very poor. The growth pine intermixed with small scrub & other oaks. . . . the country seems as desolate as possible. Not a creature was seen, nor any mark of man's neighborhood, save the deep sandy track in which I was riding (Mathew 1992:262).

European occupation of the countryside, including occupation of the Sand Hills, gradually changed its appearance. The pines which dominated the topography, for example, began to give way to scrubby hardwoods by the early 1800s (Silver 1990:187). It is almost certain that the process was largely completed by the time that Ruffin traveled across the region in the mid-1800s. Yet there were other, equally momentous changes. Turkeys and other wild fowl were less common, the flocks of Carolina parakeets and passenger pigeons were on the verge of extinction. Buffaloes were already gone from the neighboring Piedmont. In the lowland swamps the beavers, otters, and minks were close to gone, as were other occasional visitors such as bears, wolves, panthers, and bobcats.

The countryside was becoming increasingly dominated by small farms. The new ecology, created by clearing and farming grains, encouraged flocks of quail. While the minks and otters gave way to hunting pressures, they were quickly replaced by the opossum. But into the nineteenth century the most common animals were the cattle, hogs, and sheep brought by the Sand Hill settlers. Silver notes that, "fewer canebrakes and overgrazed mixed hardwood forests attest to the forage habits of these Old World Beasts" (Silver 1990:187-188). The changes were dramatic, gradually giving rise to the Sand Hills we know today.

# PREHISTORIC AND HISTORIC OVERVIEW

## Previous Research

Some of the earliest archaeology within south central North Carolina includes the 1860 excavations by Hamilton MacMillan of a mound southwest of Fayetteville, near Rockfish Creek (Holmes 1916). The mound, about 0.5 m high and 6 m in diameter, contained a large number of skeletons, reputed to have represented as many as 50 individuals. Although Holmes offered no temporal estimate for this and similar mounds in the vicinity, he did note that, "they are quite different from those mounds of Caswell and other counties of the western section of the state, and of much less interest so far as contents are concerned" (Holmes 1916:19). This was one of the earliest accounts of the differences between the "treasures" found in Mississippian temple mounds and the dearth of remains which characterized Middle Woodland burial mounds.

Nearly 30 years later, Charles Peabody visited Cumberland County on vacation with his daughter. During this respite he excavated four mounds near Hope Mills (Peabody 1910:429; Coe 1983:165). His findings paralleled the earlier studies of Holmes. Found were human bones, smoking pipes, a celt, a shell gorget, and similar Middle Woodland artifacts. Peabody's work also revealed the relatively strong local interest in the past. Peabody's contact, Dr. J.W. McNeil, was a participant on another archaeological excursion which "explored" a mound south of Little Rockfish Creek about 24 km southwest of Fayetteville (Oates 1972:328-329).

The next archaeological activity in the Fayetteville area was probably the work of Howard MacCord, who was stationed at Fort Bragg in the early 1960s. Intrigued by the mounds in the area he excavated one of them, the McLean Mound on the east side of the Cape Fear River (MacCord 1966). The mound, which was apparently as high as 1.8 m in the 1920s had eroded down to just over a half meter by the time of the study. Perhaps MacCord's most significant contribution was keeping alive the interest in burial mound studies (see Coe et al. 1982; Phelps 1983; Wetmore 1978; Wilson 1982).

Previous archaeological work at Fort Bragg includes Loftfield (1979), McCullough (1985), Jameson (1986a, 1986b), Braley (1988, 1990), Braley and Schuldenrein (1993), King et al. (1992); and Abbott (1994).

Loftfield's (1979) study consisted of a reconnaissance level survey of about 6,690 ha which consisted of a 15% sample of the entire Fort Bragg property. He recorded 490 archaeological sites of which 16 (or 3.2%) occurred within the boundaries of the Camp Mackall Drop Zone (Figure 12). None of Loftfield's sites were found within the Manchester Road survey tract, although several were situated outside the boundaries (Figure 13). Loftfield found that prehistoric sites were most often located on hilltops, toe slopes, upland flats, and saddles. Usually they occurred in association with rank 1 streams or springs and were found on sandy soils. Typically the sites were located on a northern, northeastern, or eastern slope face. He predicted that at Fort Bragg the average site density would be 10 sites per $km^2$.

During Braley's (1988) work at the Northern Training Area, he tested Loftfield's model for site location and found it to be useful (see also Braley 1990:22). However, Braley (1988) recorded many more sites (15.8 sites per $km^2$) than predicted by Loftfield's model. Of course, Loftfield's predictions were based on a reconnaissance level study where primarily fire break roads and drop zones were surveyed, whereas Braley's (1988) work consisted of an intensive survey of a 15% random sample. He found that site density was slightly higher in lowland settings (1990:23). Both Loftfield's and Braley's models focussed on prehistoric resources,

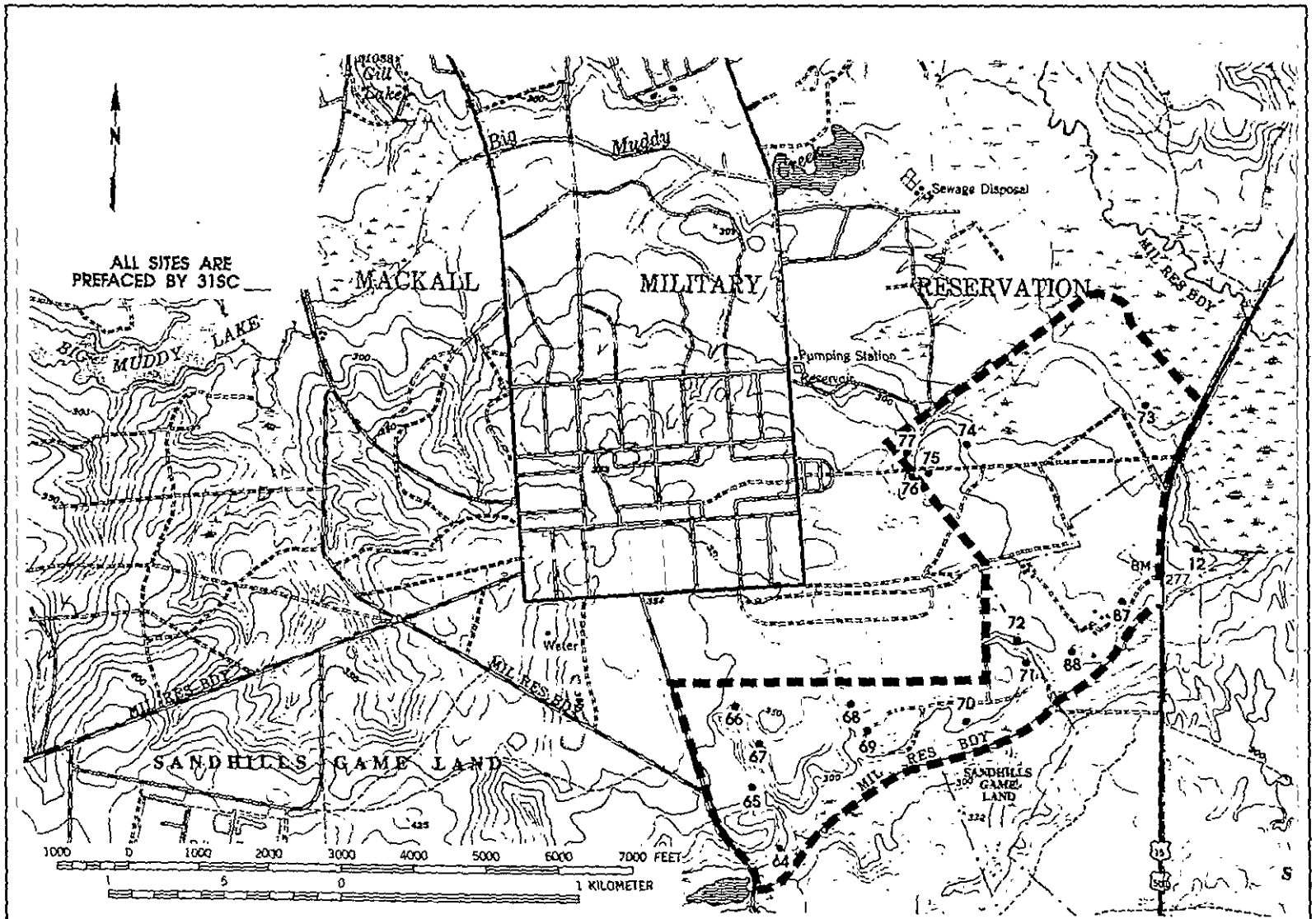


Figure 12. Sites previously identified in the Camp Mackall Drop Zone survey area (all site numbers are preceded by 31SC).

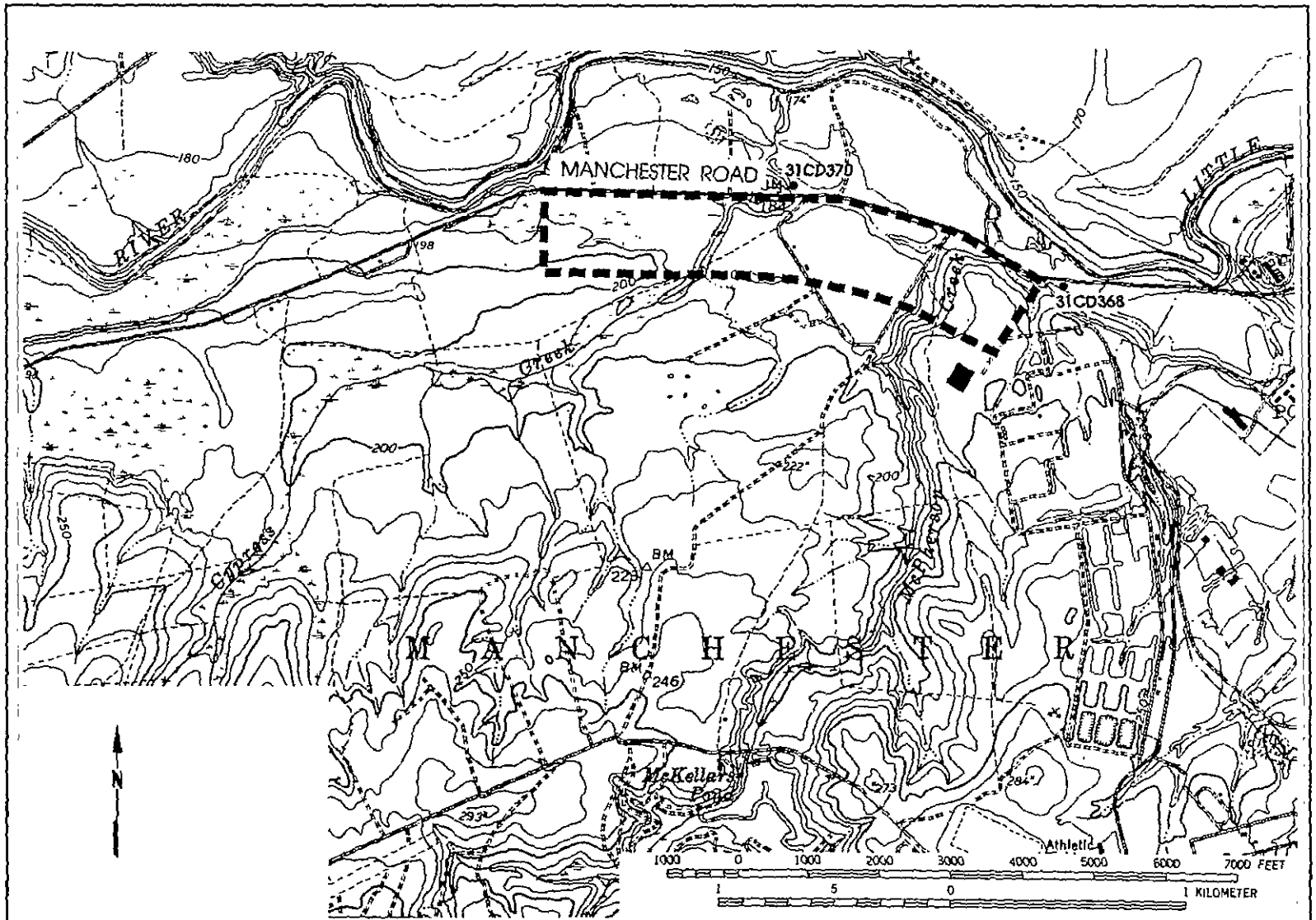


Figure 13. Sites previously located in the vicinity of the Manchester Road survey area.

and thus far no model has been provided for historic sites.

A notable early attempt to establish prehistoric settlement patterns was undertaken in 1980 using National Park Service Survey and Planning grant funds to explore Sampson County, situated east of and adjacent to Cumberland (Hackbarth and Fournier-Hackbarth 1981). This study identified 196 sites, and environmental and locational attributes for a random sample were examined in the hope of establishing predictive models. The results, however, were rather mixed. Most sites were found (not unexpectedly) near water sources. There was also a correlation between some loamy sands and sands and sites in general (Hackbarth and Fournier-Hackbarth 1981:78), although there seemed to be no preference by temporal period. Attempts to determine preferences for different lithic materials by time period were also largely unsuccessful (Hackbarth and Fournier-Hackbarth 1981:78).

In 1986 Kenneth Robinson conducted a series of reconnaissance level studies for the Cumberland County Commissioners and Administrators as part of a NPS Survey and Planning Grant. His findings document the exceptional diversity of prehistoric and historic resources in Cumberland County, although given the nature of the study no clear statements could be made concerning either site densities or predictive models (Robinson 1986:44).

In neighboring Moore County, King et al. (1992) also found that there was a preference for lowland settings. However, the sites in the uplands were larger, a departure from Braley's (1990) expectations that larger sites would be found in the lowlands. King et al. (1992:125) concluded that upland sites were occupied for longer periods of time and perhaps by more people at any given time. Site density here was similar to that found by Braley (1990) (15.2 site per $km^2$).

Although there has been a great deal of survey information gathered from the Sandhills region, there have been few excavations. Some limited excavations were conducted at a prehistoric site identified during the survey of the Rockfish Creek Wastewater Sewage Treatment Facility in southern Cumberland County. McLean and Sellon (1979) note that the site was a "mixture of Woodland and Archaic artifacts" overlying a "sparsely occupied zone of Archaic lithic material with no diagnostic artifacts" about 40 cm below the surface (McLean and Sellon 1979:65). The modest assemblage included Archaic projectile points and several hundred sherds. As Robinson (1986:42) points out, "there is still a need for re-evaluation and synthesis of the material" and little more can be said about this study.

Sassaman et al. (1990) have excavated a number of sites at the Department of Energy's Savannah River Site in the Sandhills of South Carolina. Sassaman et al. (1990) excavated several Woodland Period sites which are interpreted to have functioned as residential bases. These sites are characterized by rock clusters (which are assumed to be hearths or food preparation areas), discrete clusters of lithic debitage, and household areas which contain few artifacts.

While further removed, it seems almost inconceivable not to mention at least a few sites on which much of North Carolina's prehistoric chronology is based. About 65 km from Fort Bragg to the northwest is the Town Creek mound and village site. Described by Loftfield (1979:12) as the "great center of Pee Dee culture," it might better be viewed, at least culturally, as a small mound in a big pond. Regardless, work there has defined the Pee Dee culture, ceramics, and people (Coe 1983, 1995; Ferguson 1971; Reid 1967). About 80 km to the northwest are the equally important sites of Hardaway and Doerschuk (along with the less well reported sites at Morrow Mountain and Lowders Ferry) (Coe 1949, 1964).

Historic resources have tended to take a "back-seat" to prehistoric sites in the research conducted in the general vicinity of Fort Bragg. During surveys for the Rockfish Creek Wastewater Sewage Treatment Facility, Robinson mentions that the location of "Folly Fort," a Confederate Civil War fortification built to defend the Cape Fear River, was identified (Robinson 1986:52). Otherwise, historical archaeology has tended to focus on urban research in Fayetteville (for a

synopsis see Robinson 1986:46-48).

Turning to South Carolina, Brooks and Crass (1991) have published a predictive model for historic resources on the Savannah River Site based on survey and archival data. While early pioneers settled on the Savannah River, by the late eighteenth century, settlements had progressed up the larger drainages. A similar situation appears to have occurred in the Cape Fear River Valley (see Meyer 1961: Maps V-VIII; Loftfield 1979).[1] As better road systems developed in the nineteenth century, settlement became more road oriented (Brooks and Crass 1991:78-79). However, Abbott et al. (1995:23) point out that because the Sandhills soils were poor for growing crops, particularly in the uplands settlers were deterred from living in this area. It is likely that only lands bounded by creeks or rivers were found to be suitable for agriculture. A similar observation was made for neighboring South Carolina by Edmund Ruffin in the late antebellum (Mathew 1992). This suggests that historic settlement patterning may have changed very little through the county's history.

## Prehistoric Overview

Overviews for North Carolina's prehistory, while of differing lengths and complexity, are available in virtually every compliance report prepared. There are, in addition, some "classic" sources well worth attention, such as Joffre Coe's *Formative Cultures* (Coe 1964), as well as some new general overviews (such as Phelps 1983 and Ward 1983). These can be supplemented with a broad range of thesis and dissertations produced by students of North Carolina's colleges and universities. Also extremely helpful, perhaps even essential, are a handful of recent local synthetic statements, such as that offered by Sassaman and Anderson (1994) for the Middle and Late Archaic. Only a few of the many sources are included in this study, but they should be adequate to give the reader a "feel" for the area and help establish a context for the various sites identified in the study areas. For those desiring a more general synthesis, perhaps the most readable and well balanced is that offered by Judith Bense (1994), *Archaeology of the Southeastern United States: Paleoindian to World War I*. Figure 14 offers a generalized view of North Carolina's cultural periods.

### Paleoindian Period

The Paleoindian Period, most commonly dated from about 12,000 to 10,000 B.P., is evidenced by basally thinned, side-notch projectile points; fluted, lanceolate projectile points, side scrapers, end scrapers; and drills (Coe 1964; Michie 1977; Williams 1968). Oliver (1981, 1985) has proposed to extend the Paleoindian dating in the North Carolina Piedmont to perhaps as early as 14,000 B.P., incorporating the Hardaway Side-Notched and Palmer Corner-Notched types, usually accepted as Early Archaic, as representatives of the terminal phase. This view, verbally suggested by Coe for a number of years, has considerable technological appeal.[2] Oliver suggests a continuity from the Hardaway Blade through the Hardaway-Dalton to the Hardaway Side-Notched, eventually to the Palmer Side-Notched (Oliver 1985:199-200). While convincingly argued, this approach is not universally accepted.

[1] In Cumberland County there is good evidence that occupation spread up creeks, especially Rockfish Creek, with numerous small villages established on the banks of Cross Creek and even further upstream along the Cape Fear. One historic village which documents this settlement pattern is Cross Creek. Situated 1.6 km west of the Cape Fear River, on the banks of Cross Creek, the village was the terminus for river traffic and the point of origin for roads being built into the interior. By 1770 it contained about a hundred structures, including grist mills, a tannery, a brewery, and a sawmill.

[2] While never discussed by Coe at length, he did observe that many of the Hardaway points, especially from the lowest contexts, had facial fluting or thinning which, "in cases where the side-notches or basal portions were missing, . . . could be mistaken for fluted points of the Paleo-Indian period" (Coe 1964:64). While not an especially strong statement, it does reveal the formation of the concept. Further insight is offered by Ward's (1983:63) all too brief comments on the more recent investigations at the Hardaway site (see also Daniel 1992).

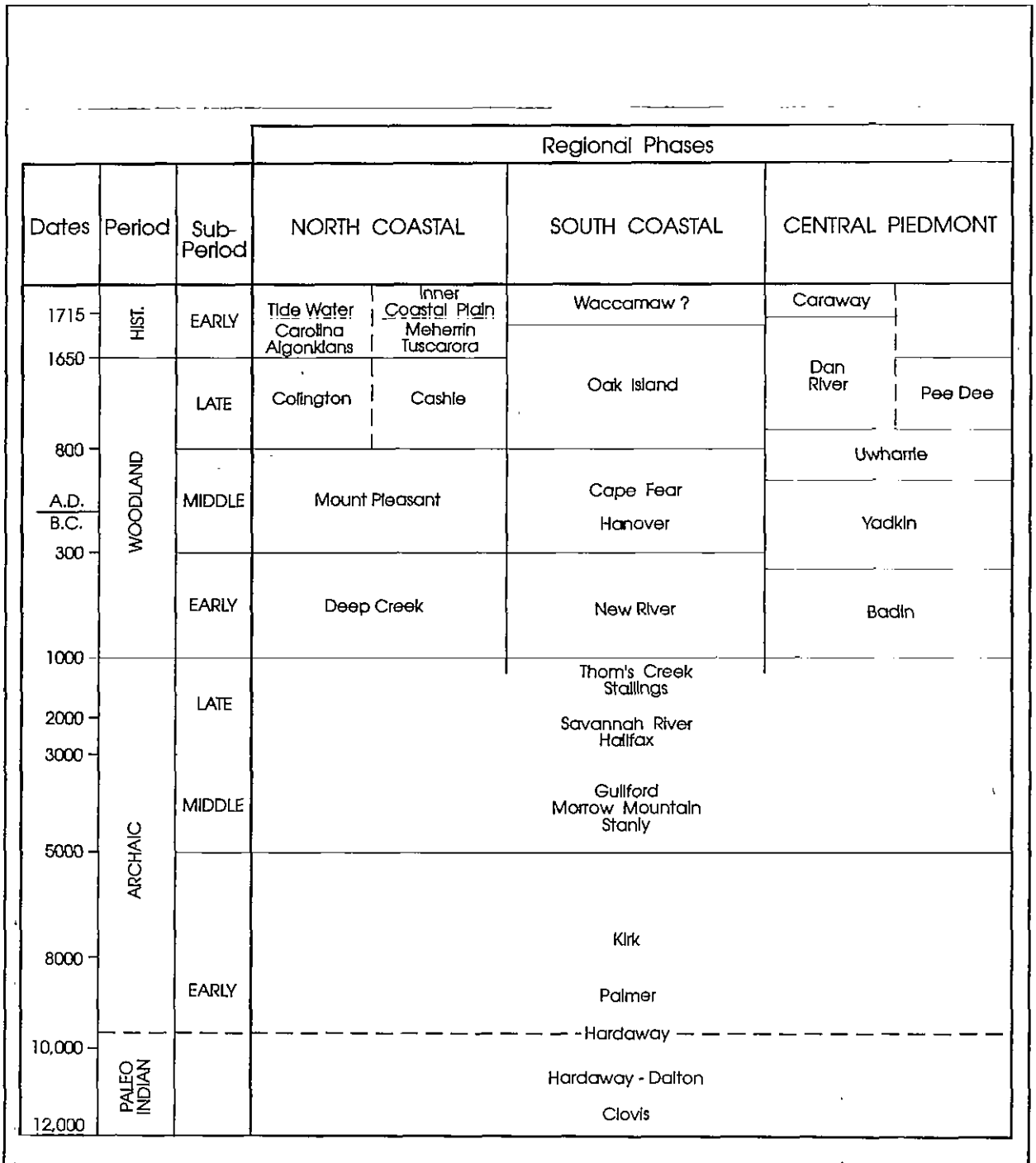


Figure 14. A generalized cultural sequence for eastern North Carolina (partially adapted from Coe 1964: Figure 116 and Phelps 1983:Figure 1.2).

The Paleoindian occupation, while widespread, does not appear to have been intensive. Artifacts are most frequently found along major river drainages, which Michie interprets to support the concept of an economy "oriented toward the exploitation of now extinct mega-fauna" (Michie 1977:124). Survey data for Paleoindian tools, most notably fluted points, is rather dated for North Carolina (Brennan 1982; Peck 1988; Perkinson 1971, 1973; cf. Anderson 1990b). In spite of this, the distribution offered by Anderson (1992:Figure 5.1) reveals a rather general, and widespread, occurrence throughout the region. Phelps (1983:21) states that settlement patterning in the North Carolina Coastal Plain is impossible to meaningfully discuss since there have been so few recorded sites, but speculates on the presence of base camps along major streams, with special activity sites in the uplands. An alternative is the model tracking the replacement of a high technology forager (or HTF) adaptation by a "progressively more generalized band/microband foraging adaption" accompanied by increasingly distinct regional traditions (perhaps reflecting movement either along or perhaps even between river drainages) (Anderson 1992b:46).

Distinctive projectile points include lanceolates such as Clovis, Dalton, perhaps the Hardaway, and Big Sandy (Coe 1964; Phelps 1983; Oliver 1985) (Figure 15). A temporal sequence of Paleoindian projectile points was proposed by Williams (1965:24-51), but according to Phelps (1983:18) there is little stratigraphic or chronometric evidence for it. While this is certainly true, a number of authors, such as Anderson (1992a) and Oliver (1985) have assembled impressive data sets. We are inclined to believe that while often not conclusively proven by stratigraphic excavations (and such proof may be an unreasonable expectation), there is a large body of circumstantial evidence. The weight of this evidence tends to provide considerable support.

Unfortunately, relatively little is known about Paleoindian subsistence strategies, settlement systems, or social organization (see, however, Anderson 1992b for an excellent overview and synthesis of what is known). Generally, archaeologists agree that the Paleoindian groups were at a band level of society (see Service 1966), were nomadic, and were both hunters and foragers. While population density, based on isolated finds, is thought to have been low, Walthall suggests that toward the end of the period, "there was an increase in population density and in territoriality and that a number of new resource areas were beginning to be exploited" (Walthall 1980:30).

According to Braley (1990:5) there are a modest number of late Paleoindian sites on Fort Bragg. Of the 196 sites that Loftfield (1979) found which produced diagnostic points, only 26 contained Hardaway, Palmer, or Big Sandy artifacts. Abbott et al. (1995:8) also identified several Paleoindian points from contexts in the near vicinity of Fort Bragg.

### Archaic Period

The Archaic Period, which dates from 10,000 to 3,000 B.P.[3], does not form a sharp break with the Paleoindian Period, but is a slow transition characterized by a modern climate and an increase in the diversity of material culture.

[3] The terminal point for the Archaic is no clearer than that for the Paleoindian and many researchers suggest a terminal date of 4,000 B.P. rather than 3,000 B.P. There is also the question of whether ceramics, such as the fiber-tempered Stallings ware, will be included as Archaic, or will be included with the Woodland. Oliver, for example, argues that the inclusion of ceramics with Late Archaic attributes "complicates and confuses classification and interpretation needlessly" (Oliver 1981:20). He comments that according to the original definition of the Archaic, it "represents a preceramic horizon" and that "the presence of ceramics provides a convenient marker for separation of the Archaic and Woodland periods (Oliver 1981:21). Others would counter that such an approach ignores cultural continuity and forces an artificial, and perhaps unrealistic, separation. Sassaman and Anderson (1994:38-44), for example, include Stallings and Thom's Creek wares in their discussion of "Late Archaic Pottery." While this issue has been of considerable importance along the Carolina and Georgia coasts, it has never affected the Piedmont, which seems to have embraced pottery far later, well into the conventional Woodland period. The importance of the issue in the Sandhills, unfortunately, is not well known.

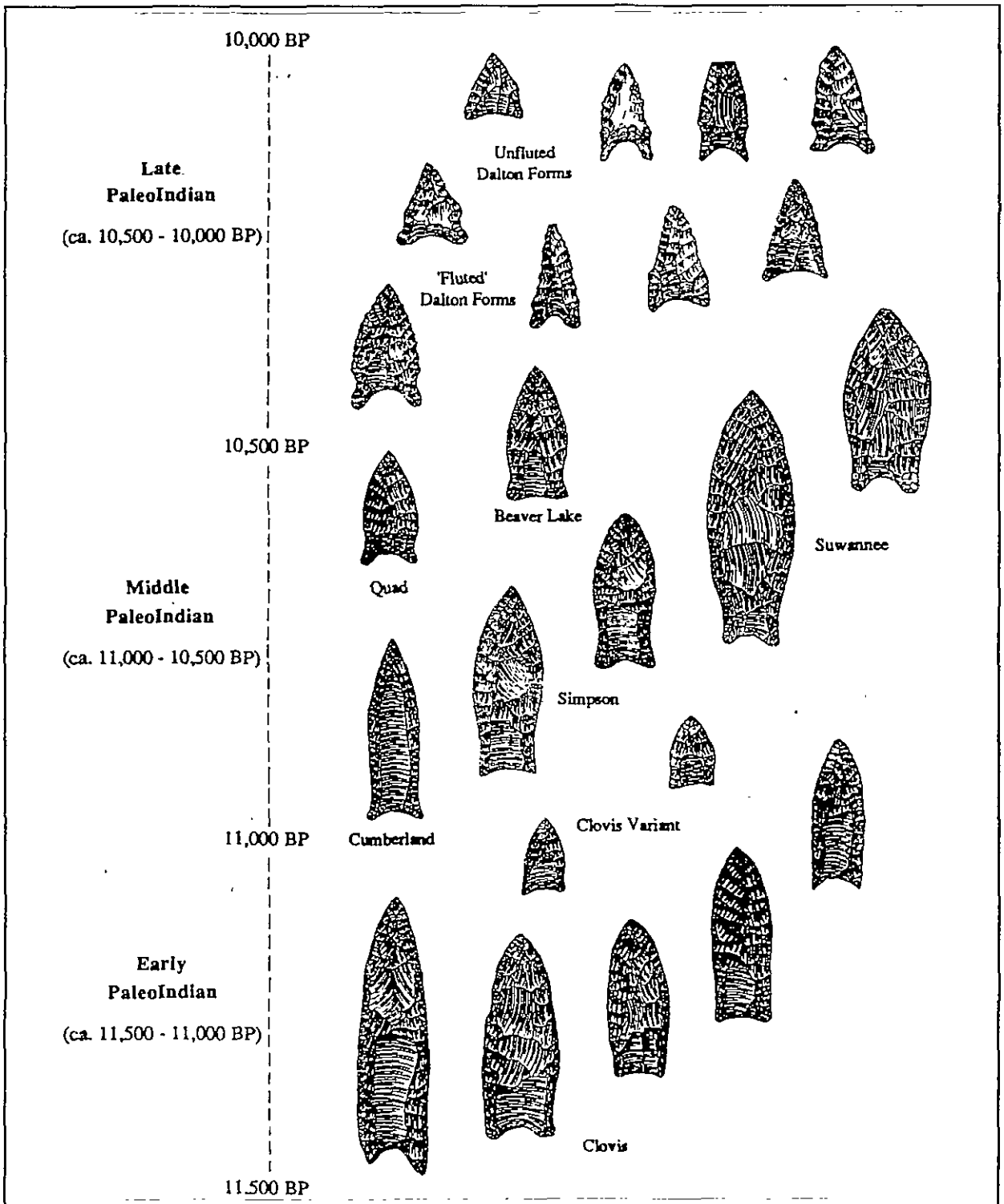


Figure 15. Diagnostic Paleoindian project points and suggested chronology for Georgia and the Carolinas (adapted from Anderson 1992a:Figure 3.1).

Associated with this is a reliance on a broad spectrum of small mammals, although the white tailed deer was likely the most commonly exploited animal. Archaic period assemblages, exemplified by corner-notched and broad-stemmed projectile points (Figure 16), are fairly common, perhaps because the swamps and drainages offered especially attractive ecotones.

Loftfield's (1979:54) data suggests that there was a noticeable population increase from the Paleoindian (with five identified components in his study) into the Early Archaic (where at least 42 components were isolated). This corresponds with findings by other researchers (see, for example, Ward 1983:65). This has tentatively been associated with a greater emphasis on foraging. Diagnostic Early Archaic artifacts include the Kirk Corner Notched point. As previously discussed, Palmer points may be included with either the Paleoindian or Archaic period, depending on theoretical perspective. As the climate became hotter and drier than the previous Paleoindian period, resulting in vegetational changes, it also affected settlement patterning as evidenced by a long-term Kirk phase midden deposit at the Hardaway site (Coe 1964:60). This is believed to have been the result of a change in subsistence strategies.

Settlements during the Early Archaic suggest the presence of a few very large, and apparently intensively occupied, sites which can best be considered base camps. Hardaway might be one such site. In addition, there were numerous small sites which produce only a few artifacts — these are the "network of tracks" mentioned by Ward (1983:65). The base camps produce a wide range of artifact types and raw materials which has suggested to many researchers long-term, perhaps seasonal or multi-seasonal, occupation. In contrast, the smaller sites are thought of as special purpose or foraging sites (see Ward 1983:67).

Middle Archaic (8,000 to 6,000 B.P.) diagnostic artifacts include Morrow Mountain, Guilford, Stanly and Halifax projectile points. Middle Archaic diagnostic artifacts were found to occur on 60 of the 196 sites found by Loftfield (1979; see also Braley 1990:7). Phelps (1983:25) also notes that the gradual increase from

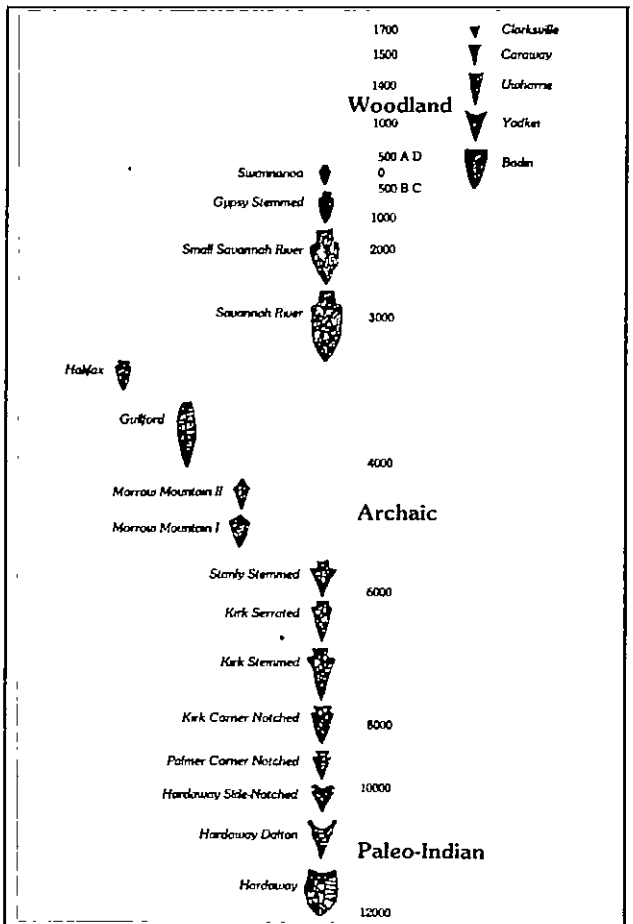

Figure 16. Projectile point traditions of North Carolina (adapted from Oliver 1985:Figure 10-8).

Paleoindian to Archaic in the Coastal Plain seems to peak during the Middle Archaic Morrow Mountain phase.

Much of our best information on the Middle Archaic comes from sites investigated west of the Appalachian Mountains, such as the work by Jeff Chapman and his students in the Little Tennessee River Valley (for a general overview see Chapman 1977, 1985a, 1985b). There is good evidence that Middle Archaic lithic technologies changed dramatically. End scrapers, at times associated with Paleoindian traditions, are discontinued, raw materials tend to reflect the greater use of locally available materials, and mortars are initially introduced. Associated with these technological changes there seem to also be

some significant cultural modifications. Prepared burials begin to more commonly occur and storage pits are identified. The work at Middle Archaic river valley sites, with their evidence of a diverse floral and faunal subsistence base, seems to stand in stark contrast to Caldwell's Middle Archaic "Old Quartz Industry" of Georgia and the Carolinas, where axes, choppers, and ground and polished stone tools are very rare.

The available information has resulted in a variety of competing settlement models. Some argue for increased sedentism and a reduction of mobility (see Goodyear et al. 1979:111). Ward argues that the most appropriate model is one which includes relatively stable and sedentary hunters and gatherers "primarily adapted to the varied and rich resource base offered by the major alluvial valleys" (Ward 1983:69). While he recognizes the presence of "inter-riverine" sites, he discounts explanations which focus on seasonal rounds, suggesting "alternative explanations . . . [including] a wide range of adaptive responses." Most importantly, he notes that:

> the seasonal transhumance model and the sedentary model are opposite ends of a continuum, and in all likelihood variations on these two themes probably existed in different regions at different times throughout the Archaic period (Ward 1983:69).

Others suggest increased mobility during the Archaic (see Cable 1982), Sassaman (1983) has suggested that the Morrow Mountain phase people had a great deal of residential mobility, based on the variety of environmental zones they are found in and the lack of site diversity. The high level of mobility, coupled with the rapid replacement of these points, may help explain the seemingly large numbers of sites with Middle Archaic assemblages. Curiously, the later Guilford phase sites are not as widely distributed, perhaps suggesting that only certain micro-environments were used (Braley 1990; cf. Ward [1983:68-69] who would likely reject the notion that substantially different environmental zones are, in fact, represented).

Recently Abbott et al. argue for a combination of these models, noting that the almost certain increase in population levels probably resulted in a contraction of local territories. With small territories there would have been significantly greater pressure to successfully exploit the limited resources by more frequent movement of camps. They discount the idea that these territories could have been exploited from a single base camp without horticultural technology. Abbott and his colleagues conclude, "increased residential mobility under such conditions may in fact represent a common stage in the development of sedentism" (Abbott et al. 1995:9).

From excavations at a Sandhills site in Chesterfield County, South Carolina, Gunn and his colleague (Gunn and Wilson 1993) offer an alternative model for Middle Archaic settlement. He accepts that the uplands were desiccated from global warming, but rather than limiting occupation, this environmental change made the area more attractive for residential base camps. Gunn and Wilson suggest that the open, or fringe, habitat of the upland margins would have been attractive to a wide variety of plant and animal species.

Another point of some controversy is the idea that the groups responsible for the Middle Archaic Morrow Mountain and Guilford points were intrusive ("without any background" in Coe's words) into the North Carolina Piedmont, from the west, and were contemporaneous with the groups producing Stanly points (Coe 1964:122-123; Phelps 1983:23). Phelps, building on Coe, refers to the Morrow Mountain and Guilford as the "Western Intrusive horizon." Sassaman (1995) has recently proposed a scenario for the Morrow Mountain groups which would support this west-to-east time-transgressive process. Abbott and his colleagues, perhaps unaware of Sassaman's data, dismiss the concept, commenting that the shear distribution and number of these points "makes this position wholly untenable" (Abbott et al. 1995:9).

The Late Archaic, usually dated from 6,000 to 3,000 or 4,000 B.P., is characterized by the appearance of large, square stemmed Savannah River projectile points (Coe 1964). These people

continued to intensively exploit the uplands much like earlier Archaic groups with, in North Carolina, the bulk of our data for this period coming from the Uwharrie region. At Fort Bragg 39 of the 196 sites contained Late Archaic components (Loftfield 1979), suggesting a leveling off, or even slight decline, from the earlier Middle Archaic. While the data must be viewed cautiously, they may provide some support to Phelps' (1983:25) contention that the Archaic population stabilized during the Morrow Mountain phase.

One of the more debated issues of the Late Archaic is the typology of the Savannah River Stemmed and its various diminutive forms. Oliver, refining Coe's (1964) original Savannah River Stemmed type and a small variant from Gaston (South 1959:153-157), developed a complete sequence of stemmed points that decrease uniformly in size through time (Oliver 1981, 1985). Specifically, he sees the progression from Savannah River Stemmed to Small Savannah River Stemmed to Gypsy Stemmed to Swannanoa from about 5000 B.P. to about 1,500 B.P. He also notes that the latter two forms are associated with Woodland pottery.

This reconstruction is still debated with a number of archaeologists expressing concern with what they see as typological overlap and ambiguity. They point to a dearth of radiocarbon dates and good excavation contexts at the same time they express concern with the application of this typology outside the North Carolina Piedmont (see, for a synopsis, Sassaman and Anderson 1990:158-162, 1994:35).

In addition to the presence of Savannah River points, the Late Archaic also witnessed the introduction of steatite vessels (see Coe 1964:112-113; Sassaman 1993), polished and pecked stone artifacts, and grinding stones. Some also include the introduction of fiber-tempered pottery about 4000 B.P. in the Late Archaic (for a discussion see Sassaman and Anderson 1994:38-44). This innovation is of special importance along the Georgia and South Carolina coasts, but seems to have had only minimal impact in North Carolina.

Although fiber-tempered pottery has been known from southeastern North Carolina since at least the late 1950s when it was collected from 31Cb4, it was not formally defined until South's 1960 survey of the coast (South 1976). Initially it was assumed to be limited to the South Carolina border area, but by the early 1970s Phelps was identifying specimens from the Greene County area (Phelps 1983:26). By the 1980s fiber-tempered wares were recognized from at least 38 sites scattered throughout the coastal plain of North Carolina. Phelps notes, however, that only what might be called Stallings Plain is found, suggesting that "the full-fledged ceramic series with its decorative types did not extend into the South Coastal region" (Phelps 1983:26). The pottery is typically associated with Savannah River Stemmed points, steatite pottery or disks, and grooved axes. The significance of the ware declines dramatically northward to the Tar drainage (Phelps 1983:Figure 1.4) and it is partially on this distribution that Phelps bases the development of two regions within the North Carolina coastal plain.

Fiber-tempered pottery has been reported from only two sites on Fort Bragg and only one site has produced Thom's Creek pottery (Braley 1990:9; Loftfield 1979). Robinson (1986:75) mentions that fiber-tempered pottery, while not common, is present and especially singles out 31CD151 as worthy of attention.

There is evidence that during the Late Archaic the climate began to approximate modern climatic conditions. Rainfall increased resulting in a more lush vegetation pattern. The pollen record indicates an increase in pine which reduced the oak-hickory nut masts which previously were so widespread. This change probably affected settlement patterning since nut masts were now more isolated and concentrated. From research in the Savannah River valley near Aiken, South Carolina, Sassaman has found considerable diversity in Late Archaic site types with sites occurring in virtually every upland environmental zone. He suggests that this more complex settlement pattern evolved from an increasingly complex socio-economic system. While it is unlikely that this model can be simply transferred to the Sandhills of North Carolina without an extensive review of site data and micro-

environmental data, it does demonstrate one approach to understanding the transition from Archaic to Woodland.

### Woodland Period

As previously discussed, there are those who see the Woodland beginning with the introduction of pottery. Under this scenario the Early Woodland may begin as early as 4,500 B.P. and continued to about 2,300 B.P. Diagnostics would include the small variety of the Late Archaic Savannah River Stemmed point (Oliver 1985) and pottery of the Stallings and Thoms Creek series. These sand tempered Thoms Creek wares are decorated using punctations, jab-and-drag, and incised designs (Trinkley 1976). Also potentially included are Refuge wares, also characterized by sandy paste, but often having only a plain or dentate-stamped surface (Waring 1968). Others would have the Woodland beginning about 3,000 B.P. and perhaps as late as 2,500 B.P. with the introduction of pottery which is cord-marked or fabric-impressed and suggestive of influences from northern cultures.

Regardless, it is between 4,000 and 3,000 B.P. when Phelps (1983:26-27, Figure 1.2) notes that the coastal plain can be divided into a northern and southern region. Our attention will focus on the southern region, along with brief remarks on the adjacent Piedmont.

Along the southern coastal plain a northern-influenced ware which Loftfield (1976:149-154) terms New River is associated with the Early Woodland. Essentially identical to the Deep Creek pottery identified by Phelps (1983:29-31) for the north coastal area, this pottery is tempered with coarse sand making it feel sandy to the touch.[4] The pottery, according to Loftfield may be "thong-marked" (i.e., simple stamped), cord-marked, net-impressed, fabric-impressed, and plain (often smoothed). Phelps suggests subsuming the New River into Deep Creek "in order to standardize typology across the Coastal Plain" (Phelps 1983:31). This has apparently not attracted much support, although frankly neither has the use of Loftfield's New River type. One factor which certainly complicates such efforts is the near total absence of excavation data coupled with good radiocarbon dates (a problem admitted by Phelps [1983:32]). Little is known about possible cultural associations, although there is some limited evidence that at least some of the small variants of the Savannah River Stemmed may be found with Early Woodland materials. For example, Oliver notes the co-occurrence of Gypsy Stemmed points with Swannonoa pottery, dated to about 200 B.C. at the Warren Wilson site (Oliver 1981:185). John Davis reports the association of a Gypsy Stemmed point with Yadkin pottery (although Badin is also reported) radiocarbon dated to between 410 B.C. and A.D. 10 at 31FY549 (Davis 1987:1, 5).[5] The large triangular Roanoke point (South 1959:146-148) is likely also associated with Early Woodland ceramics.

In spite of our near total ignorance of Early Woodland sites, many suggest that the subsistence economy was based primarily on deer hunting and fishing, with supplemental inclusions of small mammals, birds, reptiles, and shellfish. This is based on the continuation of a generalized Late Archaic pattern, which may or may not be appropriate.

Further to the west, in the Piedmont, the Early Woodland is marked by a pottery type

[4] In North Carolina, as in South Carolina, type descriptions tend to be loosely written with attributes poorly defined. To further complicate typological issues, there is almost no petrographic or chemical studies of these wares. Consequently, descriptive references such as "sandy," "coarse," and "fine" are meant only as general statements.

[5] Although very interesting, this feature should be cautiously interpreted since the carbonized material came from a depth of only 4 to 12 cm below the ground surface and Davis notes that the feature was somewhat dispersed by "natural processes." Further, the association of what is reported as both Badin and Yadkin pottery in the same feature may help account for the relatively large radiometric span. Billy Oliver (personal communication 1996), however, reports that another similar feature was also recovered from this site, although it has not been reported.

defined by Coe (1964:27-29) as Badin.[6] This pottery is identified as having very fine sand in the paste with an occasional pebble. Coe identified cord-marked, fabric-marked, net-impressed, and plain surface finishes. Beyond this pottery little more is known about the makers of the Badin wares than is known about those who made New River wares.

Somewhat more information is available for the Middle Woodland, typically given the range of about 2,300 B.P. to 1,200 B.P. The best data concerning Middle Woodland Coastal Zone assemblages comes from Phelps' (1983:32-33) work in the north coastal region and can be only cautiously extended to either the southern coast or the Sandhills. The pottery is his Mount Pleasant series which includes very coarse quartz temper and exhibits fabric-impressed, cord-marked, net-impressed, and plain surface treatments. Associated items include small varieties of the Roanoke Large Triangular points, Yadkin points, sandstone abraders, shell pendants, polished stone gorgets, celts, and woven marsh mats. Significantly, both primary inhumations and cremations are found. It seems to be characterized by a pattern of settlement mobility and short-term occupation. Phelps (1983), for example, notes a decrease in the number of small sites along the smaller tributary streams and an increase in the number of sites along major streams and estuaries. He suggests the presence of seasonal subsistence camps (focused on either coastal shellfish or riverine species further inland) coupled with sedentary villages. The shift in settlement patterns, according to Phelps, may be related "to increased dependence on domesticated plants" (Phelps 1983:35), a conclusion with very little support.

In the southern region the dominant pottery is either the Cape Fear or Hanover wares, although very little is known about the groups which produced these ceramics. The Cape Fear pottery is sand tempered and surface decorations include cord-marked, fabric-marked, net-impressed, and plain. Phelps equates the Cape Fear wares with his Mount Pleasant pottery. He notes that:

> the Cape Fear ceramic types described by South (1976:18) are essentially similar to the Mount Pleasant series and Haag's [1958] "grit-tempered," and both of these have been included in the Mount Pleasant definition to provide a comprehensive ceramic horizon across the Coastal Plain (Phelps 1983:35).

The Hanover pottery is distinguished by clay and sherd temper with some suggestion that the majority of the temper is composed of crushed sherds. The Hanover wares are fabric-impressed, cord-marked, and plain (see South 1976:16-18). Loftfield, rather than accepting South's Hanover type, chose to develop the Carteret Series (Loftfield 1976:154-157). Loftfield also offers a type description for the Onslow Series, a crushed quartz tempered ware with cord-marked and fabric-impressed surfaces. He noted, however, that Onslow pottery was found at only six sites and its chronological position, while placed in a Middle Woodland context between his Carteret and White Oak series, was poorly understood (Loftfield 1976:199). This pottery seems to have some superficial resemblance to the Piedmont Yadkin series (discussed below), but is rarely referred to in publications today.

One of the few distinctive features of the coastal plain (and Sandhills) Middle Woodland[7]

[6] The ceramics suggest clear regional differences during the Woodland which seem to only be magnified during the later phases. Ward (1983:71), for example, notes that there "marked distinctions" between the pottery from the Buggs Island and Gaston Reservoirs and that from the south-central Piedmont.

[7] Their association with the Middle Woodland, in many cases, is tenuous. Phelps, in fact, notes that he places them with his discussion of Cape Fear "because their content and occurrence elsewhere in the eastern Woodlands area" (Phelps 1983:35). There are some good reasons to suggest that they span a greater time period, perhaps into the Late Woodland. Wilson (1982:161-162), for example, presents some relatively strong evidence that at least one mound, Bw°67, may date as late as A.D. 1300. This is supported by the presence of a stone

appears to be the presence of low sand burial mounds. One of the most thorough overviews is offered by MacCord (1966), although Wilson (1982) offers a fresh review and a detailed assessment of one such mound. Artifacts are typically sparse, consisting of platform pipes, an occasional cord marked, sand-tempered sherd, celts, shell beads, copper beads, and a few triangular projectile points. Human remains include cremations, bundle burials, multiple burials, and flexed burials. The frequency of secondary burials suggest that a number of individuals were interred only after some form of reduction. Further complicating analyses, the human remains are frequently in very poor condition (the probable result of the acid soils and loose sands).

Wilson's (1982) study of the McFayden Mound, Bw°67, is particularly interesting since she was able to roughly calculate the life expectancy of the population — 19.9 years at birth. While this estimate seems low when compared to other prehistoric populations it is close agreement with that found at more Northern ossuaries. It was also possible to reconstruct the population size (which is, of course, dependent on the number of years of deaths represented in the mound. Relying on ethnohistoric data, Wilson suggests a population size of around 200 individuals, a seemingly reasonable estimate for Woodland models which might focus on macro-bands.

Some have suggested that this elaboration of burial customs suggests changes in social organization and that it also implies a more sedentary lifestyle. This, in turn, has led to discussions of possible horticultural activities during the Middle Woodland. We concur with Ward's (1983:73) assessment that while there is certainly convincing evidence of horticulture in other regions, there is virtually no evidence of domesticated plant foods in North Carolina before, at the earliest, the Late Woodland.

Moving to the Piedmont the dominant Middle Woodland ceramic type is typically identified as the Yadkin series. Characterized by a crushed quartz temper the pottery includes surface treatments of cord-marked, fabric-marked, and a very few linear check-stamped sherds (Coe 1964:30-32). It is regrettable that several of the seemingly "best" Yadkin sites, such as the Trestle site (31An19) explored by Peter Cooper (Ward 1983:72-73), have never been published.

At Fort Bragg the Middle Woodland period (2,300 B.P. to 1,200 B.P.) is better represented than the earlier Woodland phase. Over 5% of the diagnostic sites produced Yadkin projectile points (Braley 1990). Undifferentiated Woodland artifacts were found at 115 (or 58.7%) of the 196 sites identified by Loftfield (1979) which suggests a great increase either in population or land use in this area (Braley 1990).

In some respects the Late Woodland (1,200 B.P. to 400 B.P.) may be characterized as a continuation of previous Middle Woodland cultural assemblages. While outside the Carolinas there were major cultural changes, such as the continued development and elaboration of agriculture, the Carolina groups settled into a lifeway not appreciably different from that observed for the previous 500-700 years. From the vantage point of the Middle Savannah Valley Sassaman and his colleagues note that, "the Late Woodland is difficult to delineate typologically from its antecedent or from the subsequent Mississippian period" (Sassaman et al. 1990:14). This situation would remain unchanged until the development of the South Appalachian Mississippian complex (see Ferguson 1971).

Phelps would challenge this view, at least for the north coastal region, holding instead that "from A.D. 800 onward archaeological assemblages of the Late Woodland period in the North Coastal region can be related to ethnohistoric information and studies, thus providing the relative comfort of social and linguistic identities and the use of the direct historical approach" (Phelps 1983:36). In the north Phelps has done a superb job identifying the Carolina Algonkians (on the coast) and the Tuscarora (on the interior). The Algonkians are

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pipe comparable to those of found at Uhwarrie phase sites, the presence of Adam's Creek pottery (possibly proto-historic), and cranial measurements which strongly resemble Piedmont Siouan populations.

associated with the Colington phase and the associated pottery is shell-tempered with fabric-impressed, simple-stamped, plain, and incised surface treatments (Phelps 1983:36, 39-43; see also Gardner 1990; Phelps 1981, 1982, 1984). The inland Tuscarora appear to have been producing the Cashie series pottery, which is tempered with grit and pebbles and has fabric-impressed, simple-stamped, incised, and plain surfaces (Phelps 1983:37-39, 43-47).

For the south coastal region information is considerably less secure and ethnohistoric placement is confounded by a seeming mix of Siouan, Algonkian, and perhaps even Muskhogean linguistic and cultural traits. South offers a brief synopsis of enthohistoric data for the south coast (1976:5-8) and associates these mixed groups with his Oak Island complex, which Phelps (1983) adopts. Loftfield found similar evidence, although he chose to designate the material White Oak (Loftfield 1976:157-163). One of the earliest detailed south coastal studies was Loftfield's examination of the Uniflight site in Onslow County (Loftfield 1978). Loftfield found a late spring/early summer period occupation and went on to suggest a seasonal adaptive cycle for the region which included dispersal to the estuaries. The predominant food remains, according to Loftfield, were shellfish. His excavations also revealed the village, with two houses discernable. They measured about 13 m in length and 6 m in width, with posts placed at 10 to 20 cm centers. Perhaps the best evidence associating the Oak Island wares with a specific ethnic group is the research conducted at a New Hanover County ossuary where the skeletal population was identified as Siouan (Coe et al. 1982).

Phelps (1983:48) notes that Loftfield's work has been concentrated adjacent to the presumed regional border and that additional work is necessary. He also remarks that it seems likely there may be different interior and coastal expressions for the Oak Island phase.

Moving into the Piedmont, the Late Woodland is typically associated with small triangular points such as Uwharrie, Caraway, Pee Dee, and Clarksville (Coe n.d., 1964;49; Oliver 1985; South 1959:144-146). The characteristic pottery is the Uwharrie series which contains crushed quartz (one characteristic of which is its tendency to protrude through the wall of the pottery). This series included cord-marked and net-impressed surface treatments. The ware was described by Coe in the unpublished Poole site report (Coe n.d.).[8] This pottery appears to represent an evolution from the earlier Yadkin wares (Coe 1995:156). Of equal interest is a radiocarbon date of A.D. 1610, suggesting that this pottery lasted well into the protohistoric. Coe also notes that "Town Creek and other villages situated along the fall line between the Piedmont and the Coastal Plain seem to have formed a southern boundary for the production and use of Uwharrie ware," which he suggests was made by the ancestors of the Sara, Tutelo, Occaneechi, Saponi, and Keyauwee (Coe 1995:158). If this is correct, Uwharrie pottery may be exceedingly rare in the Fort Bragg area.

Unfortunately, excavated sites are as difficult to come by as well published and distributed type descriptions. Results of excavations at one of the more interesting Uwharrie sites, Yd'1 (Coe 1972), have never been published. This site was first explored in 1957, at which time 28 human burials, two dog burials, and 42 features were recovered. In 1972 further work identified 83 features, although no additional burials were encountered. The features were classified as storage pits (with either straight walls and flat bottoms or bell-shaped), hearths, and refuse pits.

Moving from the Late Woodland into the proto-historic period at least some of the clouds surrounding the Piedmont dissipate, largely as the result of Wilson's (1983) extraordinary efforts to make sense out of nearly 50 years of confusion. There is some considerable evidence that the descendant of the Uwharrie pottery is the Dan

[8] This study was intended to be published under a monograph series entitled, *University of North Carolina Laboratory of American Archaeology Publications*, but was never completed. The work was conducted in 1936, although the ensuing report is undated.

River Series (Lewis 1951:242-259; Gardner 1980:54-55; Wilson 1983:249-267, 270-277, 282-296). One of the more interesting conclusions of Wilson's work is that:

> the pottery from the Catawba River during the Late Prehistoric period is markedly different from that of the Dan River region. Bowl forms, surface finishes and decorations differ significantly between the two areas. The presence of burnished and complicated stamped surfaces, cazuella and hemispherical bowl forms, the use of circular reed punctations to create "pseudo-nodes," and applique rim strips, all illustrate the direct influence that emanated from the Pee Dee, and Pee Dee related, culture (cf. Reid 1965, 1967) of the Wateree River in South Carolina, and the Little River section of the Pee Dee River in south-central North Carolina. . . . An attempt to incorporate these foreign modes of surface finish, vessel shape and decoration, similar to that illustrated in the 31Id31 material, is not evidenced at this early date in the Dan River assemblage. The differences between the Dan River and the Catawba River collections in the placement of decorations, the decorative elements that occur, and the association of these designs with vessel forms and surface finish, underscores this interaction dichotomy (Wilson 1983:315).

Curiously, South (1972) makes a somewhat similar observation for the coastal plain linguistic groups, noting considerable cultural attributes cross-cutting the historic Muskhogean and Siouan linguistic boundary. Archaeology at the Payne site in neighboring Moore County also found evidence of possible interaction between Pee Dee and Siouan cultures. Both Pee Dee and Uwharrie pottery were found at the site, possibly suggesting an intrusion of the South Appalachian Mississippian into this otherwise seemingly Siouan village. Further work at such border sites may help explain the introduction and use of corn by Siouan groups as well as the acquisition of a carved paddle stamped pottery tradition (Mountjoy 1989:19-20).

Widmer (1975) and Loftfield (1979) have suggested that settlement patterns on the Inner Coastal Plain did not change from the Archaic period onward, because it was believed that the nutrient deficient soils were not well suited for agriculture. Braley (1989) found, however, that the Late Woodland period sites at Fort Bragg do exhibit differences from the earlier period since there were more Woodland sites than any other type and because there were minor, but statistically significant differences in the sizes of upland and lowland Woodland sites. Although agriculture may not have been a significant aspect of Late Woodland life, the populations appear to have become more sedentary and the lowland, river-oriented terrain took on greater importance (Braley 1990:12).

**South Appalachian Mississippian**

The Pee Dee culture was defined through the excavations of Joffre Coe at Town Creek which is located about 65 km west of Fort Bragg (Coe 1995; Reid 1967). The site, generally accepted to represent a northern intrusion of a Mississippian chiefdom, was originally dated from about A.D. 1550 to 1750, although more recent analyses suggests a date more likely between A.D. 900 and 1400 (Coe 1995:159).

Braley (1990) indicates that Pee Dee ceramics, which are typically diagnostic of the Mississippian period, are lacking at Fort Bragg. The lack of Pee Dee ceramics suggest that the prehistoric or proto-historic societies of the Fort Bragg area were relatively unaffected by these cultural events (Braley 1990:12). It is also possible that areas which would typically contain large Mississippian sites were not examined by Loftfield to any degree. Large river terraces associated with the Lower Little River may not have contained many fire breaks or other exposures to provide

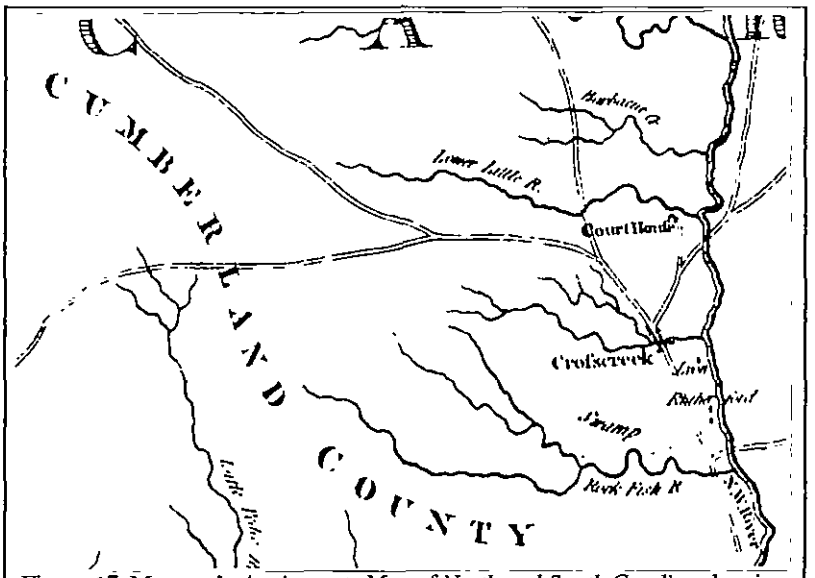


Figure 17. Mouzon's *An Accurate Map of North and South Carolina* showing the Fort Bragg area in 1775.

primarily due to two reasons: the Tuscarora Indians which occupied the region were not subdued until about 1715 and during the 1710s pirates controlled the Cape Fear and used it as a base of operations (Rankin 1989; Schonhorn 1972:137). Two cities developed in the 1720s at the mouth of the Cape Fear (Brunswick and Wilmington) which helped to provide a viable transportation and distribution network. By 1724, the land office for the Cape Fear region opened and settlement began to take place along the river. By the 1730s Scottish Highlanders began to settle the Cape Fear region near present day Fayetteville (Meyer 1961:71-72).

easy discovery. It is possible that future work in these areas will provide evidence for Mississippian occupation.

## Historic Overview

It was nearly a century after the failure of the Roanoke Island colony in the 1580s before a permanent, effective settlement of North Carolina was begun. The colonization of North Carolina was not well promoted by the English because its shores were not easily accessible. They, therefore, turned their attention toward Charleston and the Chesapeake region. As a result, North Carolina settlers most often came over land by way of other colonies such as South Carolina, Virginia, and Pennsylvania (Meyer 1961:69-71). These settlers were described as the "dregs and gleanings of all the other English Colonies" (McCusker and Menard 1986:170).

The only river navigable by sea-going ships was the Cape Fear, but it was not utilized until the 1720s. This was

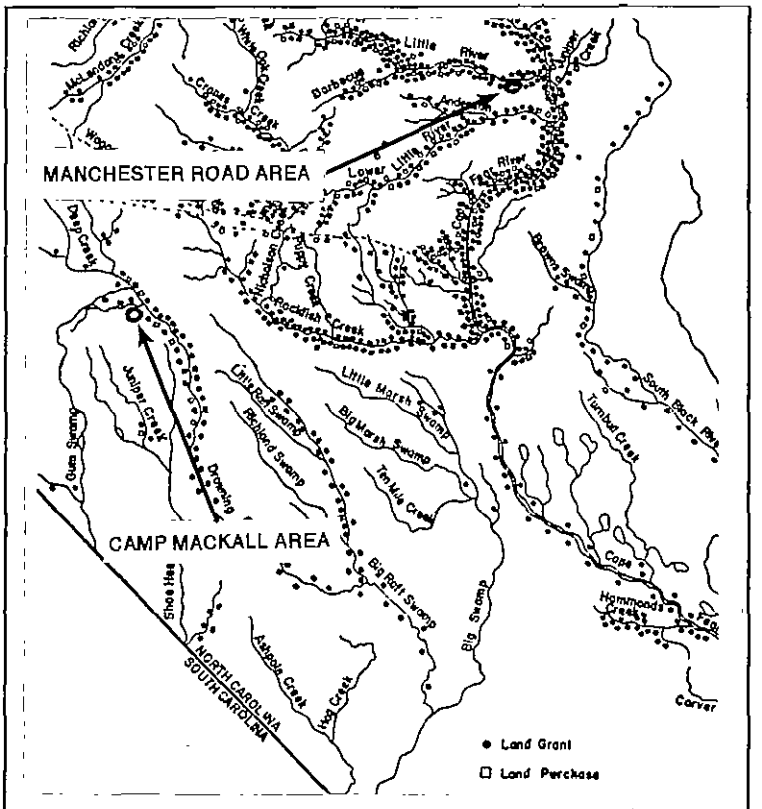


Figure 18. Land grants and purchases obtained by Highlanders in the project areas between 1733 and 1775 (adapted from Meyer 1961:Map VIII).

Lefler and Newsome (1973) state that there were a number of Ulster Scots (or Scotch-Irish) who also settled the area although it appears that the bulk of their grants and purchases were in present day Sampson and Duplin counties. Other Ulster Scot settlements were on the Yadkin, Catawba, and Eno rivers. Oates (1972:14) states that there was an Irish colony on the upper Northeast Cape Fear in 1736, but does not provide details.

It is interesting to note that the Highlander culture was so dominant and persistent in the area that in 1828 a tourist noted that the post office had to hire a clerk who could speak both English and Gaelic (Ross 1965:300). Oates (1972:621) notes that even up to the Civil War era that there were a few surviving Gaelic speaking inhabitants. The Longstreet Church cemetery, located about 3 km east of the project area contains at least one antebellum epitaph in Gaelic (Kern and Boyko 1996; Ross 1965:300).

One thorough exploration of the importance of British folkways in the development of the American culture is Hacket's (1989) *Albion's Seed* in which he explores the four principal migrations. While the Highland Scots is not one of these, his brief comments are worth repeating:

> another colonial culture developed in North Carolina's Cape Fear Valley, where Highland Scots began to arrive circa 1732. Many followed after the '45 Rebellion, and by 1776 their numbers were nearly as large as the white population in the South Carolina low country. Other ethnic groups also settled in the Cape Fear Valley, but so dominant were highlanders that Gaelic came to be spoken in this region even by people who were not Scots. . . . Even in the twentieth century, the Cape Fear people sent to Scotland for ministers, who were required to wear the kilt, play the pipes, and preach in Gaelic.
>
> The political history of the culture was very different from its border neighbors. During the American Revolution the borderers were mostly Whigs; Scottish highlanders were mainly Tory. In the new republic, the backsettlers tended to vote Democratic-Republican, and the highlanders of the Cape Fear Valley voted Federalist. Historian Duane Meyer writes that these people were "remarkedly consistent in choosing the losing side." They never became part of the solid south; in 1900 they cast their ballots for McKinley rather than Bryan. Here was another culture that preserved its separate identity into the twentieth century (Hacket 1989:818-819).

While during the early period settlement grew up along the rivers and creeks, the community of Argyle grew up along an early road which closely follows the alignment of modern-day Longstreet Road. However, road-oriented settlement was unusual since much of the sandy upland soils were unsuitable for productive farming. According to Hudson (1984:53) the Blaney-Gilead-Lakeland soil association which dominates the north half of Hoke County is not classified by the U.S. Department of Agriculture as prime farmland.[9] These soils are also not listed as being state or locally important farmland, which means while not prime farmland, they are suited to producing crops economically only when managed according to modern farming methods (Hudson 1984:53). It seems likely that the Argyle community was more of a mercantile district.

Cumberland County, which incorporated portions of present day Hoke County, was

[9] Prime farmland is defined as containing soils that, "are best suited to producing food, feed, forage, fiber, and oilseed crops. Such soils have qualities that are favorable for the economic production of sustained high yields of crops" (Hudson 1984:53).

established in 1754 (Corbitt 1950). The first settlement took place near the mouth of Cross Creek and by 1760 the settlement was formally set apart (Figure 17). In 1762 the town of Campbelltown was established near the Cross Creek settlement, and in 1778 the two towns were combined. In 1783 the name was changed to Fayetteville (Lefler and Powell 1973:92). The town is situated on the west bank of the Cape Fear River at the head of its navigable point. Wilmington is 192 km by water, making Fayetteville's position, both in relation to Wilmington and to the interior, valuable during the early historic period.

During the early half of the eighteenth century, settlement in the area was primarily along the Cape Fear river, but as these areas filled up settlement began to occur on the larger streams. Land grants and purchases secured by Highlanders between 1733 and 1775 are illustrated in Figure 18, showing that by the end of the colonial period the area was well settled, at least along the waterways.

The large, vast tracts of long leaf pine spurred on the production of naval stores during the colonial period. These forest resources also led the people of the Cape Fear region to produce items such as lumber, barrels, and other wood products. Crops included corn, rice and other grains. In addition, livestock were raised to supplement the income of the people (Lefler and Powell 1973:93; see also Hill 1983, and McLean and Sellon 1978).

The growth and expansion of the backcountry during the Proprietary period after 1750 created a number of problems including the creation of new counties and equal representation in the legislature. The backcountry citizens complained bitterly about eastern domination since planter aristocracy in the east dominated the control of the provincial government. The unit of representation was the county and there were far more counties in the east than in the rapidly growing west. As population increased in the backcountry, the legislature created more counties in the west, but also created additional counties in the east to guarantee that control would not be lost to the back country. There were nine boroughs in the state and only two of these (Salisbury and Hillsborough) were in the Piedmont. The rest (Bath, Brunswick, Edenton, New Bern, Campbelltown, Halifax, and Wilmington) were in the east. Tension between east and west mounted in 1766 by the passage of an act to establish a permanent capital. The new capital was an eastern borough — New Bern (Lefler and Powell 1973:223-224).

Out of this tension grew a backcountry movement known as the Regulator movement. This name was adopted because their main goal was to obtain the right to regulate their own government. A number of incidents occurred including attacks on court officials in Anson and Johnston counties, and disorders in Rowan and Edgecombe counties. This movement was interrupted by the American Revolution and its aftermath (Lefler and Newsome 1973:236-239).

Cross Creek did see some minor action during the war. Governor Martin, who had previously fled his office due to lack of British military support, worked out a plan for the British conquest of North Carolina. Martin was to raise approximately 9,000 Loyalists. Lord Cornwallis was to sail from Ireland with seven regiments of British regulars and take command of both groups which were to combine in the Wilmington-Brunswick area by mid-February of 1776. In January of that year the plan was approved. On January 10, Governor Martin issued a proclamation asking all loyal subjects to "unite and suppress the rebellion" in North Carolina. In mid-February 1,600 Highlanders led by Donald McDonald were assembled at their rendezvous at Cross Creek and then began their march toward Wilmington. Colonel James Moore, who directed the Whig forces, was determined to keep the enemy from reaching the port. A secondary objective was to take possession of Cross Creek. To achieve these goals, Moore marched his forces to Elizabeth Town; Colonel Alexander Lillington and Colonel James Ashe were ordered to reinforce Caswell and secure Moore's Creek Bridge, 29 km north of Wilmington since the Loyalists would have to cross this bridge to reach Wilmington (Figure 19).

The Whig forces reached the bridge before

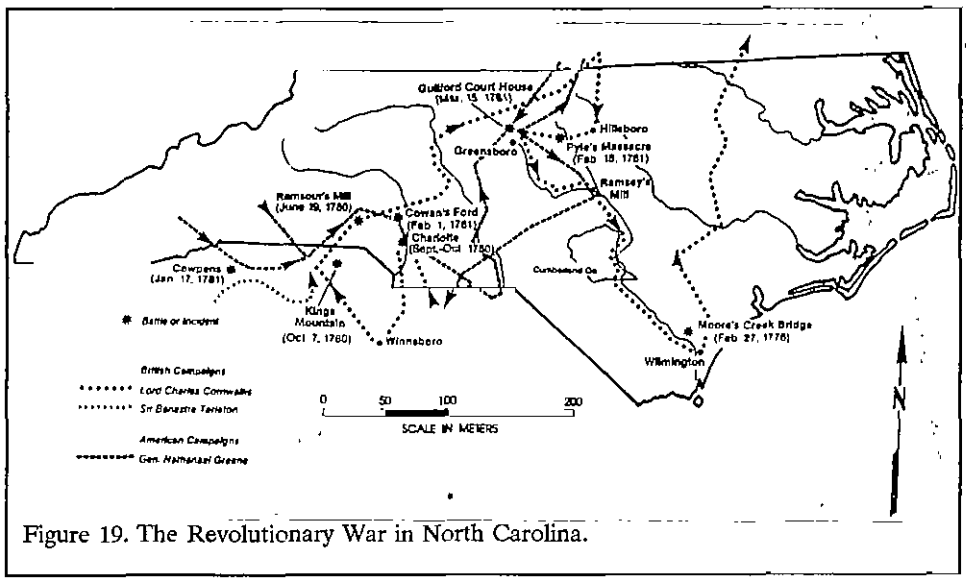

Figure 19. The Revolutionary War in North Carolina.

the Loyalists and set a number of traps which made crossing the bridge difficult and added confusion to the ranks. For three minutes the Loyalists were swarmed with swan-shot and musket fire. Soon the battle was over with an overwhelming Whig victory (Lefler and Powell 1973:275-278).

Two events which directly affected the Fort Bragg reservation occurred in 1781 as Lord Cornwallis retreated through Cumberland County on his way to Wilmington from Guilford Courthouse, and when the conflicting loyalties of local Whigs and Tories resulted in the Piney Bottom Massacre.

As Cornwallis was being pursued by Colonel Henry Lee he passed along the edge of Fort Bragg along the Lower Little River. Having no provisions left, the soldiers began to forage the area of Cumberland County. Cornwallis and his troops crossed into what is now Fort Bragg at Monroe's Bridge. While his troops continued on their way, local tradition has it that Cornwallis diverged from the group and headed to Malcolm Smith's house in the Argyle area on present day Longstreet Road where he visited (Nye n.d.:16-21). Unfortunately, this visit is based primarily on local lore.

The Piney Bottom Massacre occurred on August 4, 1781 as a result of a surprise attack on the Whigs by local Tories led by John McNeill (Nye n.d.:22-26). Seven men were killed, one was wounded, and a number of houses were pillaged or burned. Nye (n.d.) locates the massacre site where Morganton Road crosses Piney Bottom Creek although Wicker (1966) disputes this location since Morganton Road was not in place until 1794. He suggests that the massacre occurred nearer to what is today Holland Drop Zone.

The war left North Carolina in a bad situation. It was in debt, its money was worthless, and its English markets were lost. Most of the state's population led a simple, low-level economic existence which made the effects of the war more acute than in surrounding, richer states. Gradually export trade reached a new high. New England replaced Britain as the major customer for goods. Major exports included corn, lumber, and tobacco. Population steadily increased after the war. Census reports from 1790 to 1820 gave the population as 393,751; 478,103; and 638,829 (Lefler and Newsome 1973:2660270).

During the antebellum period there was a remarkable increase in the state's two major cash crops—tobacco and cotton. Agricultural expansion and prosperity were partly due to a systematic movement to improve farming methods and rural life which resulted in the publication of journals such as the *Carolina Cultivator* and *North Carolina Planter* (Lefler and Newsome 1973:390-392). In 1840 the county's products were listed as 6,037 bushels of wheat, 16,577 bushels of oats, 3,019 bushels of rye, 291,630 bushels of corn, 459,747 pounds of cotton, 16,800 pounds of wool, 1,794 barrels of turpentine, and 78,540 dollars worth of

lumber (Wheeler 1925:124).

As expressed in the quantity of turpentine and lumber listed above, naval stores were important to the area economy. North Carolina ranked number one as the world's foremost producer of naval stores from 1720 to 1870 (Lefler and Newsome 1973:97). The longleaf pine, which was plentiful in the study area, was the basic resource needed for the industry. Many farmers would produce naval stores during slow agricultural seasons or in bad weather and operations ranged from small to large. On large operations, labor was organized on the task system, much like that found at the Carolina rice plantations.

Frederick Law Olmsted passed through this area on a stage coach road from Raleigh to Fayetteville in 1853. His account of the terrain was precise, like that of an environmental surveyor:

> the road was a mere opening through a forest of the long-leafed pine; the trees from eight to eighteen inches in diameter, with straight trunks bare for nearly thirty feet, and their evergreen foliage forming a dense dark canopy at that height, the surface of the ground undulating with long swells, occasionally low and wet. In the latter case there was generally a mingling of deciduous trees and a watercourse crossing the road, with a thicket of shrubs. The soil sandy, with occasionally veins of clay; the latter more commonly in the low ground, or in the descent to it. Very little grass, herbage, or underwood; and the ground covered, except in the road, with fallen pine-leaves. Every tree, on one, two, or three sides, was scarified for turpentine. In ten miles, I passed half a dozen cabins, one or two small clearings, in which corn had been planted, and one turpentine distillery (Olmsted 1953:138).

His observations concerning many of the region's people were no less sharp:

> The negroes employed in the turpentine business, to which during the last week I have been giving some examination, seem to me to be unusually intelligent and cheerful, decidedly more so than most of the white people inhabiting the turpentine forest. Among the latter there is a large number, I should think a majority, of entirely uneducated, poverty-stricken vagabonds. . . . They are poor, having almost no property but their own bodies; and the use of these, that is, their labour, they are not accustomed to hire out statedly and regularly, so as to obtain capital by wages, but only occasionally by day or job, when driven to it by necessity. A family of these people will commonly hire, or "squat" and build, a little log cabin, so made that it is only a shelter from the rain, the sides not being chinked, and having no more furniture or pretension to comfort than is commonly provided a criminal in the cell of a prison. They will cultivate a little corn, and possibly a few rows of potatoes, cow-peas, and coleworts. They will own a few swine, that find their living in the forest (Olmsted 1953:146-147).

What he described as North Carolina's "proverbial reputation for the ignorance and torpidity of her people" he attributed to "the general poverty of the soil in the eastern part of the state," certainly a reference to the Sandhills and Inner Coastal Plain (Olmsted 1953:148).

Cumberland County experienced a slow population growth. In 1790 there were 8,671 inhabitants including 6,407 whites, 2,181 slaves, and 83 free blacks. The greatest jump in population occurred between 1810 and 1820 when the

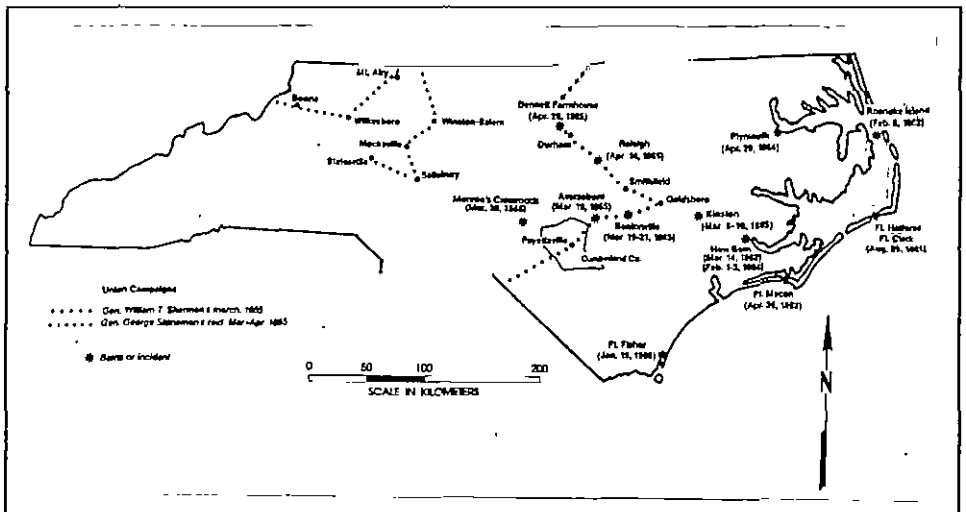


Figure 20. The Civil War in North Carolina.

population grew from 9,385 to 14,446 with a 29% increase in the white population, an 83% increase in the free black population, and 41% increase in the slave population. This increase is probably due to the expansion and prosperity of agriculture. However, given the poor soils found in the Fort Bragg area, this population growth probably occurred elsewhere in the county, perhaps closer to Fayetteville.

There was an increase in manufacturing establishments during the antebellum as well. From 1850 to 1860 these establishments increased from 2,663 to 3,689. In 1860 Cumberland County had 84 turpentine distilleries, seven cotton mills, and three iron works (Lefler and Newsome 1973:397-398). Although notable economic advances had occurred in the state after 1840, North Carolina was still relatively poor by the time of the Civil War. It was rural and isolated, and its coast was dangerous and without a good port (Lefler and Newsome 1973:402). Cumberland County's population in 1850 was 12,447 whites, 7,217 slaves; and 946 freedmen (Wheeler 1925:124).

The only military action to take place in the project area during the Civil War was during General William T. Sherman's march in 1865. While Sherman's army was moving north from Savannah to meet Grant's army in Virginia, they passed through Fayetteville (Figure 20), destroying the Confederate Arsenal on March 11. Constructed between 1836 and 1859, this was one of the South's most important military depots (Barrett 1963:311-317; Grunden et al. 1995:15; Lefler and Newsome 1973:459).

Immediately affecting the Fort Bragg reservation was the Battle of Monroe's Crossroads about 4 km west of the Manchester Road tract. A skirmish occurred early on March 10, 1865 when a surprise attack by Confederate forces, under the

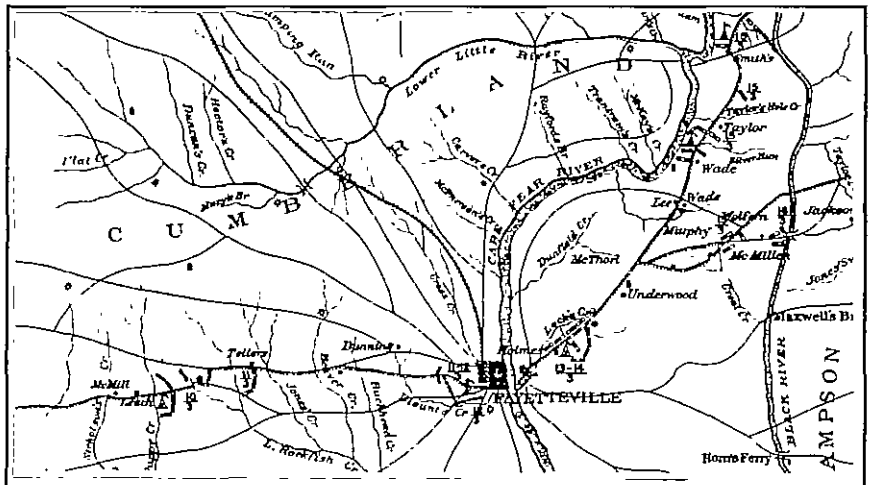


Figure 21. Vicinity of Fayetteville and Fort Bragg in March 1865 (adapted from *Atlas to Accompany the Official Records of the Union and Confederate Armies*, Plate LXXX, Number 8).

command of General Wade Hampton, was made on Charles Monroe's house, the temporary headquarters of Brigadier-General H. Judson Kilpatrick. (Barrett 1963:301-317; Guernsey and Alden 1977:720 [1866]; Nye n.d.:42-61). The battle took place in an area encompassing two plantations or farms — Rocky Mount and Green Springs. Although the attack initially favored the Confederates, the Federal troops rallied and retook the camp. Perhaps most importantly, by this time the war was already lost and the battle is little more than a footnote in the tragic conflict.

Immediately after the war, cotton prices peaked, causing many Southerners to plant cotton using free labor, in the hope of recouping losses from the war. The hiring of freedmen began immediately, with variable results. They began with a wage labor system established by the Freedmen's Bureau. Gradually owners turned away from wage labor contracts to two kinds of tenancy — sharecropping and renting. While very different, both succeeded in making land ownership very difficult, if not impossible, for the vast majority of Blacks. Sharecropping required the tenant to pay his landlord part of the crop produced, while renting required that he pay a fixed rent in either crops or money (Orser 1988).

Smith provides a description of the poor soils found in the Sandhills region:

> In the midst of the large bodies of sand-hill lands there are occasional tracts of a fair grade of cultivatable land, generally found on or near the water courses. The sand-hill soils proper will produce almost nothing; they furnish, however, a scant pasturage in the swampy tracts which abound along the sluggish streams. The yaupon and the scuppernong grape flourish even in these sand wastes (Smith 1880:548).

Although the county's population grew up through the twentieth century, the poverty of the Sandhills soil deterred any large scale settlement of areas away from creeks and rivers. Smith (1880) describes the location of cultivable lands. He states that the rivers and creeks have wide areas of bottom lands:

> or are flanked by swamps or oak and pine flats, and on these are made crops of corn, potatoes and rice. Cotton is grown on the better class of uplands of mixed oaks and pines, which are interspersed among the sandy tracts. The forests are open and park-like . . . . In the midst of the large bodies of sand-hill lands there are occasional tracts of a fair grade of cultivatable land, generally found on or near the water courses (Smith 1880:548).

By the turn of the century, Cumberland County's population had increased to 14,952 whites and 12,369 blacks with a total population of 27,321 (State Board of Agriculture 1986:328). The town of Fayetteville grew rapidly after the introduction of a Norfolk and Southern railway line connecting Fayetteville to Raleigh in 1911, paralleling the history of many Southern communities (Lefler and Newsome 1973:586). It was in this year that Hoke County was created out of portions of Cumberland and Robeson counties (Corbitt 1950:124).

The military base at Fort Bragg near Fayetteville was established in 1918 as a field artillery training center. Covering around 60,000 ha, largely in Cumberland and Hoke counties, and named for General Braxton Bragg, Confederate corps commander, it was the largest military reservation in the United States. The land was purchased primarily because it was cheap since the soils were poor. For all the reasons that farmers were uninterested in the area and willing to sell, government officials were interested. In 1922 it became a permanent Army post, and in the 1940s it was described as having:

> a complete system of municipal and recreations facilities, a chapel, and a school for children; the buildings are modern, built of brick and stucco. The post

> organization is made up of four regiments of field artillery with latest equipment. A field artillery board tests experimental matérial on the firing range. Pope Field, the Air Corps station, is garrisoned by Flight C, 16th Observation Squadron, and the Second Balloon Squadron. The landing field has a mile-long runway.
>
> In summer the Reserve Officers Training Corps comes to Fort Bragg for training, units of the North Carolina National Guard encamp for two weeks, and the Citizens Military Training Camp is conducted. Since the establishment of the Civilian Conservation Corps in 1932, Fort Bragg has been headquarters of District A (Federal Writers' Project 1988:326).

In 1952 the 1st Special Operations Command was established and Fort Bragg became the Headquarters for Special Forces, Rangers, and Civil Affairs and Psychological Operations. It is also the home of 18th Airborne Corps, the largest corps in the world, as well as the home of the 20th Engineering Brigade, the 16th Military Police Brigade, the 18th Field Artillery Brigade, the 35th Signal Brigade, the 52nd Military Intelligence Group, and the 1st Corps Support Command (*Charlotte Observer*, May 20, 1984). Fort Bragg has become the largest camp of its kind in the nation, leading to tremendous growth of the surrounding region.

Camp Mackall's military history is somewhat more recent. The post was established in April 1943 when over 26,000 ha of property was transferred from the Secretary of the Interior to the Secretary of War for the purpose of training airborne combat units. The cantonment at Camp Mackall, which included an airfield and nearly 2,000 structures, was used by the 11th, 17th, 101st, and 13th Airborne Divisions until the end of the Second World War.

At the end of the war much of the transferred land was returned to the Secretary of the Interior or the State of North Carolina. Camp Mackall, however, continued to be held by the military and, with the coming of the Vietnam War, a Special Forces training facility was developed at Mackall. Today the facility is still used by Special Forces and the airfield is used for Army rotary wing, Air Force airlift, Low Altitude Parachute Extraction System, and airmobile training.

# RESEARCH STRATEGY AND METHODS

## Research Goals

The primary goals of this survey were to identify, record, and assess the significance of archaeological sites within the 230 ha Camp Mackall Drop Zone and the 70 ha Manchester Road survey tract. As stated earlier, this work is being done in order to fulfill compliance with the National Historic Preservation Act (Public Law 89-665, as amended by Public Law 96-515) Guidelines for Federal Agency Responsibilities, under Section 110 of the National Historic Preservation Act, Army Regulation AR 420-40, and 36CFR800 (Protection of Historic and Cultural Properties).

Preservation efforts offer important economic, tourism, and education opportunities (see, for example, Rypkema 1990). Yet, understandably these are of little consequence to a government agency whose mission statement is national defense. Clearly, in such a case, the motivation is compliance with law. In spite of this, preservation offers intangible benefits, such as external benefits to society, which are worthy of careful consideration. U.S. Representative John Lewis from Georgia has remarked that, "it is not enough to learn from history or a movie, we must make sure that these precious pieces of our history are preserved." Knowing and understanding our past, many have argued, creates better citizens and hence a better society.[1] Citizens take greater pride in their city's, county's, and country's historical achievements. This pride naturally boosts morale and enhances civic participation. Native American and African American groups can rightly take pride in the expression of their unique ways of life, their history, and their contribution to our Nation. Exploration of our past reveals the heights of which humanity is capable. The study supplies continual inspiration and promise. The exploration of the past makes it possible to keep on seeing, thinking, and reflecting afresh — and this freshness and willingness to explore the past is essential to the democratic process. Exploration of the past may offer social commentary by providing new insights into past lives, or how society reacted to past pressures. It may even help us to better understand the failures of past.

It is also important that a country which has so strongly advocated educational improvement and reform should also understand the irreplaceable role that historic and prehistoric resources can play in teaching us about our heritage. It is essential that the next generation of citizens understand the stories hidden within our archaeological sites and in our historic churches, houses, factories, and communities. The ability to reach out and touch the past, forming a strong and clear link between yesterday and today, offers an unforgettable understanding of another way of life and helps our children better understand the fabric of life in our country. By exploring and emphasizing African American and Native American history it is possible to strengthen the understanding that our heritage is the combined history and culture of all of our citizens.

Oftentimes historic preservation, through the exploration of the past, may challenge rather than reassure, and provoke rather than sooth. Archaeological research, in many ways, offers much more than history ever can since history is largely written by the well educated, the wealthy, and the white. History tends to ignore the poor, the underclass, the illiterate, making them invisible people. History is what others want us to know, archaeology offers the opportunity to explore the reality of the past without the filter of subjectivity added by some, perhaps many, historical accounts.

[1] One of the earliest discussions of preservation for patriotic reasons is Charles B. Hosmer, Jr.'s *Presence of the Past*, a history of preservation in America up to 1926. He reveals that long before even the Civil War, America's need to create a national identity manifested itself in efforts to preserve historic sites.

Archaeology offers the potential to explore the lives of African American slaves that are largely known only through the dry history of white slave-owner account books and plantation diaries. While slave owners were concerned with how many acres a slave could hoe, or how much they had to be fed, the owner was rarely interested in how slaves lived, died, ate, or made their house a home. Likewise, our understanding of Native American groups in the historic period is dominated by traders and occasional visitors who had clear reasons for coloring their accounts. Archaeology offers the only opportunity for better understanding the reality of the past.

Part of this reality is also the understanding that history is not made up of single events, or great people, or unique ideas alone. As Tony Wrenn and Elizabeth Mulloy explained nearly two decades ago:

> Events are only punctuation marks; the process itself is history. It takes days and days of irritation and heat and insult, and grievance to provoke a revolution. A bicentennial commemorates 200 years — not just the years on either side of a hyphen (Wrenn and Mulloy 1976:15).

History is fluid and on-going. It involves both the great and the small. Archaeological studies help us better understand both the continuum and also the importance of the common person.

Many also point out that historic preservation is a "merit good" — simply because preservation is an important part of life, its perpetuation and dissemination merits government support. Like food, shelter, and education, some feel that everyone should be entitled to a minimum quantity and standard of historic preservation experience, whether that be exposure to historically significant buildings, a better understanding of past industrial technology, or the ability to explore Native Americans who lived thousands of years ago. The government allows preservation efforts to be available and emphasizes their importance by support of preservation on government facilities and land.

Inherent in the understanding of merit good is the realization that, without subsidy, the cost of historic preservation is too high relative to most consumer's incomes. In other words, were it not for government intervention it is unlikely that much of the educational aspects of preservation would widely exist or be available for the public benefit. Only the wealthy would be able to afford private preservation "experiences." It follows that there is an intrinsic wrong in making our history available to only the richest 20% of the population, who are likely to represent a very biased cross-section of our society.

However, in addition to the legally mandated goals of this study, we identified and incorporated a range of secondary goals which reflect an effort to address at least some of the issues identified as important to the discipline. These included both methodological issues, whose answers will help to better and more cost-effectively undertake survey and preservation efforts, and research issues, whose answers will help to better explore and refine our understanding of the past. The secondary goals of this survey included:

- the examination of changing prehistoric land use;
- the affects of clear-cutting and long-term exposure on archaeological sites;
- the effectiveness of 30 m interval transects at locating significant resources;
- changing lithic material preferences; and
- site function/duration based on artifact content.

No major analytical hypotheses were created prior to the field work and data analysis, although certain expectations regarding the secondary goals

will be outlined in these discussions. The research design proposed for this study is, as discussed by Goodyear et al. (1979:2), fundamentally explorative and explicative.

As stated above, the primary goals of this survey were to identify, record, and assess the significance of archaeological sites within the survey tract. The latter aspect involves the sites' eligibility for inclusion on the National Register of Historic Places, although Chicora Foundation only provides an opinion of National Register eligibility and the final determination is made by the lead compliance agency, the United States Army, in consultation with the State Historic Preservation Officer at the North Carolina Department of Cultural Resources.

The criteria for eligibility for the National Register of Historic Places is described by 36CFR60.4 and states that:

> [t]he quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
>
> a. that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b. that are associated with the lives of persons significant in our past; or
>
> c. that embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> d. that have yielded, or may be likely to yield, information important in prehistory or history.

It is generally accepted that "the significance of an archaeological site is based on the potential of the site to contribute to the scientific or humanistic understanding of the past" (Bense et al. 1986:60). Butler suggests that the only valid measurement of significance must be based on what he calls the "theoretical and substantive knowledge of the discipline" at any particular moment in time (Butler 1987:821). While the use of this approach over that developed by Glassow[2] (1977) has been suggested, Butler himself acknowledges, "we cannot foresee future research questions, and we may not possess the theory to interpret and understand all that is present" (Butler 1987:822). At this point in time it seems essential to recognize the importance of asking the right questions at the right sites, not limiting the number of sites at which questions are asked, or what questions are posed. Clearly, asking "right questions" at the "right sites" can be difficult and requires an understanding of the "theoretical and substantive knowledge of the discipline" (Trinkley 1990:30-31).

*National Register Bulletin* 36 (Townsend et

[2] Glassow's (1977) approach to evaluating site eligibility is through the use of five properties: site integrity, site clarity, artifactual variety, artifactual quantity, and site environmental context. These qualities stress properties of the archaeological record. *Integrity* refers to the degree of preservation or amount of in situ remains present at a site. It relates to the condition and amount of archaeological artifacts, ecofacts, and features found at a site. *Clarity* indicates how well the strata or subsurface features may be distinguished. *Variety* refers to the qualitative variability in the archaeological remains found at a particular site. *Quantity* refers to the frequency or density of the artifacts or subsurface remains and it is in many ways one of the easiest properties to evaluate (although it is certainly not the most important). The last criterion, *environmental context*, refers to unusual environmental features or zonation which might be important in distinguishing sites or site types.

al. 1993) provides an evaluative process that contains five steps for forming a clearly defined explicit rationale for either the site's eligibility or lack of eligibility. Briefly, these steps are:

- identification of the site's data sets or categories of archaeological information such as ceramics, lithics, subsistence remains, architectural remains, or sub-surface features;

- identification of the historic context applicable to the site, providing a framework for the evaluative process;

- identification of the important research questions the site *might* be able to address, given the data sets and the context;

- evaluation of the site's archaeological integrity to ensure that the data sets were sufficiently well preserved to address the research questions; and

- identification of "important" research questions among all of those which might be asked and answered at the site.

This approach, of course, has been developed for use documenting eligibility of sites being actually nominated to the National Register of Historic Places where the evaluative process must stand alone, with relatively little reference to other documentation and where typically only one site is being considered.

In the case of a survey which identifies multiple sites the process outlined by Townsend et al. (1993) can become burdensome. Consequently, this study has elected to combine some of the steps, making the process more streamlined, without substantively altering the goal to ensure that sites capable of providing significant information are provided the protection afforded in the historic preservation process. The development of a context was not undertaken for each site, but is found outlined in the prehistoric and historic overview section of this report. The identification of "important" research goals is discussed below, outlining significant research issues such as those identified for the coastal region of North Carolina (Phelps 1983).

Otherwise, the evaluative process was essentially the same as outlined by Townsend et al. (1993). Data sets and integrity are discussed, and in a number of cases the lack of data sets is striking. Many of the types of materials previously identified by Loftfield (1979) at some of these sites are no longer present — primarily lithic tools. Reference is also made to the great deal of erosion/deflation that has occurred on the drop zone which has destroyed the integrity of most of the sites and destroyed other data sets (such as subsurface features) that might have once been present. Reference to the prehistoric context is made (when diagnostic material was found) as well as research issues that the site might be able to address.

In his synthesis of prehistoric archaeology of the Coastal Plain, Phelps (1983) listed some of the most important issues regarding the cultural history of the area. While certainly not exhaustive, they are used to help determine which sites identified in the drop zone are important to a better understanding of the local prehistory. Phelps (1983:50) states that these issues include:

> (1) knowledge of Paleo-Indian period site distribution correlated with Pleistocene environment, which would result in settlement and subsistence models to be tested against those currently proposed;
>
> (2) discovery and excavation of either single-component or stratified Paleo-Indian and Archaic period sites to provide more accurate descriptions of assemblages for each phase and to assay

> diachronic changes in the assemblages as well as changes in subsistence strategies and other cultural subsystems;
>
> (3) location and excavation of sites that have preserved the transition from the Late Archaic to the Early Woodland to evaluate the impact of new technology introduced in the latter period;
>
> (4) a study of changes in settlement and subsistence patterns during the Early and Middle Woodland periods in order to understand changes resulting from the introduction of cultigens; and
>
> (5) excavation of sites that represent the range of types for each phase of the regional sequences to provide a complete culture history as a platform from which processual studies can be launched (Phelps 1983:50).

Although these issues are rather broad, they provide a good deal of latitude for framing more specific questions. These issues are discussed in greater detail in the Prehistoric Overview section of this report, but it is appropriate to briefly outline a few of the issues raised by Phelps.

His first and second research topics involve the dearth of information available concerning the Paleoindian Period along the North Carolina coast. Associated legitimate questions might include, what constitutes a Paleoindian site? This, of course, raises the question of where the line is drawn either to incorporate Hardaway and Palmer as terminal phases of the Paleoindian or to include them with Archaic traditions. The answer, of course, cannot come solely from typological studies and arguments, but must incorporate the identification and study of both stratified and even single component sites. The study must include the integrated exploration of both the soils and palynological records. Questions are raised concerning the types of landforms and microenvironmental areas in which Paleoindian sites are most likely to occur. Can the distribution of sites help us refine our understanding of Paleoindian subsistence and their use of different habitats? Additional questions are legitimately raised concerning the differing dates suggested for early sites. It is unfortunate that sites like Hardaway were destroyed before appropriate dating could be undertaken, but there are certainly other sites which may contain suitable proveniences and materials. How do the materials from the Sandhills compare, typologically, to those from the Coastal Plain or Piedmont? Is it possible to distinguish differences which might suggest the extent of different settlement systems?

His third question poses the concern of how Late Archaic Savannah River Stemmed point users became Early Woodland Badin or Deep Creek/New River pottery makers. While obviously early, well-dated sites producing Stallings or Thom's Creek pottery would be ideal, the investigation of virtually *any* Early Woodland ceramic site in the North Carolina Sandhills or on the state's Inner Coastal Plain would be exceptional, especially if it were then published. The research goal also should be interpreted to include questioning how the size of Savannah River points seems to have so consistently declined in size. Can stratified sites showing this change be identified? Ranging off from these initial questions, there are a whole series of especially significant issues. Perhaps one of the most intriguing is how the Middle and Late Archaic evolved into the Early and Middle Woodland. What were the processes, both internal and external, which caused this change and how significant was the change on the daily lives of the Native Americans?

This feeds into Phelps' fourth question concerning cultigens. While his question is phrased to support the assumption that cultigens were present in Early Woodland, it seems that there is little evidence for such a statement anywhere in North Carolina. Therefore, one of the most important research goals might involve a rededication of efforts to seek out floral and faunal remains for intensive study. If they are present,

what was their source — introduction from outside the region or internal development of "weedy" plants? What is their context and date? What was the impact of these horticultural efforts, if they existed? Did they cause any real change in the lifeways of the Woodland peoples?

Phelps' final research goal is simple — sites, and lots of them, need to be examined in order to understand the range of diversity present. Sites in the lower Piedmont, sites in the Sandhills, sites in the Inner Coastal Plain, and sites in the Lower Coastal Plain need to be explored to understand the impact of both topography and the environment.

We realize that this lays out a tremendous range of questions. Some of them will likely be unanswerable, at least with our current level of understanding and expertise. And some may perhaps never be answered, lost in the fog of time behind the clouded glass. Yet too often the very asking of questions is ridiculed. While good for a little controversy and a quick laugh at a colleague's expense, such attitudes do nothing to promote the growth of archaeology and they do even less to help the public understand their heritage. Questions, even those which at first appear unanswerable, need to be asked. Without questions research can become little more than the blind acquisition of data.

One of the secondary goals we outline was to examine changing prehistoric land use. The CZR survey (Loftfield 1979) found that sites are commonly located on hill tops, toe slopes, upland flat areas, and saddle-like settings. The majority of sites were within 100 m of a water source on sandy soils. However, no attempt was made to determine land use through time. Braley (1990) has made some general statements regarding land use based on Loftfield's (1979) study as well as his study of the Northern Training Area (Braley 1989) (see also Braley 1990:3-13). These changes are discussed in the Prehistoric Overview section of this report.

Since it is likely that at least some portions of the Camp Mackall Drop Zone have been clear cut and left exposed for approximately 40 years, an attempt was made to understand how much erosion/deflation has occurred at the archaeological sites and how that relates to the sites' ability to address significant research questions and therefore, their eligibility for the National Register of Historic Places. In addition, because of this exposure, a few of the sites at Camp Mackall may have been collected continually over time. The analysis of the collections also focussed on how this has affected the sites' interpretive ability.

Another goal was to determine the ability of 30 m interval shovel test transects to locate all of the archaeological resources on a given tract. Since some survey areas are exposed, theoretically speaking, it provided us with the ability to identify and spatially define every site that exists there. The results of this survey were to be compared with what might be expected from a traditional survey where visibility is usually poor to non-existent. Whether or not there was a need to find small sites that could not be found on traditional surveys is also to be discussed.

Since the study area is thought to contain a large quantity of prehistoric lithic sites, analysis was geared toward determining lithic resource preference changes through time. Both quartz river cobbles and metavolcanic materials were locally available, although river cobbles could be obtained within the boundaries of Fort Bragg and metavolcanics were known to outcrop as close as 16 km away (North Carolina Department of Conservation and Development 1958).

Another goal was to determine site function/duration based on artifact content. Sassaman et al. (1990) have suggested that examining the tool to debitage ratio can provide functional information about a site. For instance, a low tool-debitage ratio will reflect either "locations of intensive lithic tool production, or locations where tools or cores were modified but not discarded" (Sassaman et al. 1990:224). A high tool-debitage ratio correspond to "relatively intensively utilized locations (e.g. field stations) away from bases and/or sources of lithic raw material" (Sassaman et al. 1990:224). Artifact density is also a method of examining site function since it reflects the "relative intensity of material

discard at a site. By extension, the amount of discard is assumed to be proportional to the *cumulative duration of site occupation and/or the* total number of site occupants, and/or the intensity of activities from which discarded debris was generated" (Sassaman et al. 1990:223). Diversity of the assemblage can also measure the length of occupation since the discard rate of curated items (such as hafted bifaces, pots, atlatls, etc.) is so low that all classes of artifacts will only be found together at sites with long occupational histories (Sassaman et al. 1990:224). This length of occupation can also be measured by the number of components present (Sassaman et al. 1990).

All of these (tool/debitage ratio, artifact density, and artifact diversity) are tools to examine the nature of an archaeological site in terms of function and duration of occupation. While Sassaman et al. (1990) recommend looking at large subsurface data sets, examining the materials from the project areas, which were typically all gathered from the surface using the methods previously described, may provide a reference point for framing future research questions.

**Archival Research**

These investigations incorporated a review of the site files at the North Carolina Office of State Archaeology. A total of 16 previously recorded archaeological sites were recorded within the survey boundaries of the Camp Mackall tract by Loftfield (1979) as part of a reconnaissance level survey of Fort Bragg, Camp Mackall, and Simmons Airfield. No previously recorded sites were found for the Manchester Road survey area on Fort Bragg proper. According to Fort Bragg's historic preservation plan (Braley 1990) no standing structures exist on the tracts and the nearest structure or site listed on the National Register of Historic Places is Long Street Church (ca. 1845) which is located approximately 4 km west of the Manchester Road tract. Another notable site is Monroe's Crossroads which was located about 11 km west of Manchester Road survey area. Here a skirmish between Wheeler's cavalry and a detachment of General Sherman's troops under the command of General H. Judson Kilpatrick occurred at the end of the Civil War in March of 1865 (Loftfield 1979:27). At Monroe's Crossroads were two plantations: Rocky Mount and *Green Springs. Loftfield (1979:28)* recommended that this area receive further study for possible National Register nomination (see the **Prehistoric and Historic Overview** section of this report).

**Field Survey**

As is often the case in field investigations, some boundaries of the survey tracts were difficult to locate in the field or were somewhat nebulous. Even 7.5' USGS topographic maps fail to show all the detail and complexity of land forms. Added to this is the nature of a landscape actively used by the military. Consequently, project boundaries were driven with the base archaeologist, Mr. Wayne Boyko. This was particularly important in the Camp Mackall survey tract, where the northern boundaries, south of the landing strip and actual drop zone area, were complex.

As specified by the North Carolina Office of State Archaeology, an archaeological site is defined as six or more artifacts in a 20 m area or any two consecutive positive shovel tests. An isolated occurrence consists of six or less artifacts. Archaeological sites and occurrences were assigned state site numbers.

Subsurface testing, for the purpose of boundary definitions, was to consist of testing along cardinal directions at 10 m intervals on sites less than 50 m across and 20 m on larger sites.

While typically, survey tracts are divided into high, medium, and low archaeological probability zones, Loftfield's (1979) study of the area revealed that the Camp Mackall Drop Zone had a high density of prehistoric archaeological resources (17 sites per $km^2$) compared to other areas of Fort Bragg. For instance, the estimated prehistoric site density for all of Fort Bragg is 10 sites per $km^2$ (Braley 1990:22). However, the high density at the Camp Mackall Drop Zone is a result of the area being clear cut and left exposed. Although this provided excellent surface visibility, the work order issued by the National Park Service specified that the whole survey area be considered

high probability.

The scope of work specified that high probability surveys include transects and shovel tests spaced at 30 m intervals across the tract. All areas were to be shovel tested except areas of standing water or with 15% or greater slope. As discussed with Dr. David Anderson of the National Park Service, since the drop zone exhibited excellent visibility in many areas, those places would be surveyed using pedestrian transects spaced 10 m apart. Once in the field, this methodology changed. Since visibility was spotty, which made changing from 30 m shovel test transects to 10 m pedestrian transects difficult, it was decided to walk transects spaced at 30 m intervals, digging shovel tests at 30 m in areas of poor visibility and surface surveying a 15 m radius area in places which provided good visibility. This provided equivalent coverage with greater organizational ease. In addition, it fully complied with the scope of work, which requires coverage at 30 meter intervals.

Shovel tests, which were typically 30 cm by 30 cm or greater, were to be excavated to subsoil or if subsoil could not be identified to the maximum depth achievable with a shovel (about 75 cm). Minimally, shovel tests were excavated to about 30 cm below surface. As will be discussed, in most cases this represented either the extent of remaining A horizon soil or actual penetration into the C horizon subsoils. The fill was to be screened through 0.62 cm mesh hardware cloth and soil stratigraphy was to be recorded on positive shovel tests.

Survey transects were plotted and numbered on project field maps (Figures 22 and 23) and transect logs were kept indicating if a shovel test was excavated or if the area was surface collected in 30 m grid squares. A total of 212 transects were traversed and a total of 1845 shovel test stations (shovel tests/surface survey) were used. Of the 1845 shovel test stations 1387 (or 75.7%) consisted of shovel tests and the remaining 458 were surface surveyed.

As the site maps in the following report section are examined, it will become obvious that on occasion a positive surface collection station will appear to be located *outside* of the site boundaries. While this may at first appear to be an error in the location of site boundaries, it is not. When required, each surface collection station was based on the transect grid. These were used to form a 30 meter collection square. In order to refine boundaries as much as possible, the materials from these collection areas were not randomly collected. Instead, the grid square was walked and the artifacts were flagged. This allowed site boundaries to be drawn on the basis of where in the collection areas artifacts were actually found. This means that while the actual center point of the collection station may be shown "outside" the site boundaries, if you draw a 30 meter square around the center point, the portion within the drawn site boundaries actually produced artifacts. The rest of the collection area did not contain artifacts and was therefore excluded from the site. The goal here, of course, was to as much as possible replicate the precision offered by multiple shovel tests.

As specified by the North Carolina Office of State Archaeology, an archaeological *site* is defined as six or more artifacts in a 20 m area or any two consecutive positive shovel tests. An isolated *occurrence* (which is also assigned a site number) consists of five or less artifacts. Subsurface testing for the purpose of boundary definitions was to consist of grid pattern testing, typically along cardinal directions at 10 m intervals on sites less than 50 m across and 20 m on larger sites. A rough determination of site size, typically based on the distribution of surface artifacts, was made before closer interval testing based on findings from the 30 m transects.

Shovel tests were to be excavated until two consecutive negative tests were encountered around each positive test. The last shovel test in the sequence containing archaeological materials was to constitute a boundary. At Camp Mackall there were cases where no subsurface remains were encountered in excavated shovel tests at sites. Therefore, boundaries were defined by the extent of surface remains. These boundaries were typically defined based on distance and orientation from a positive shovel test station.

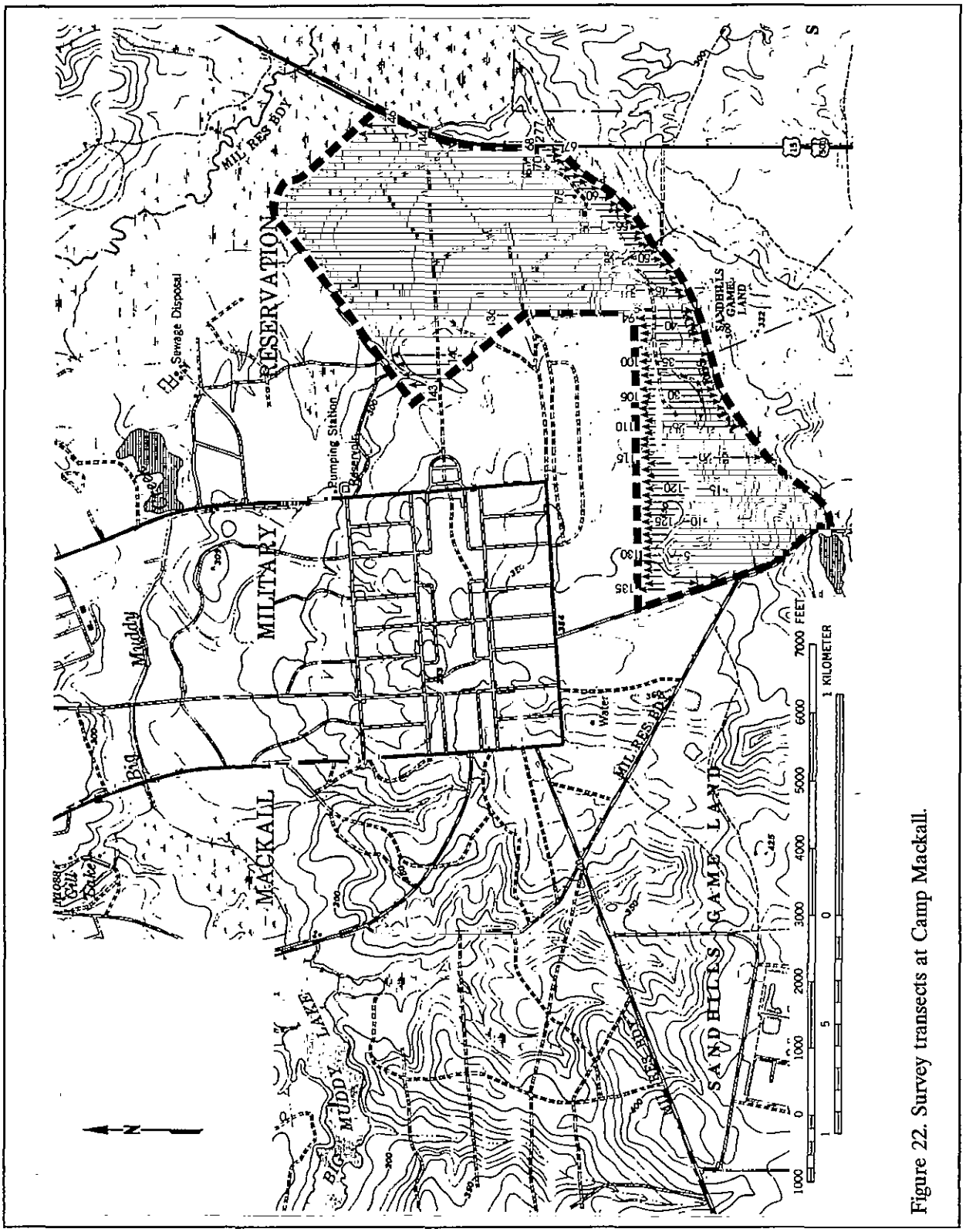


Figure 22. Survey transects at Camp Mackall.

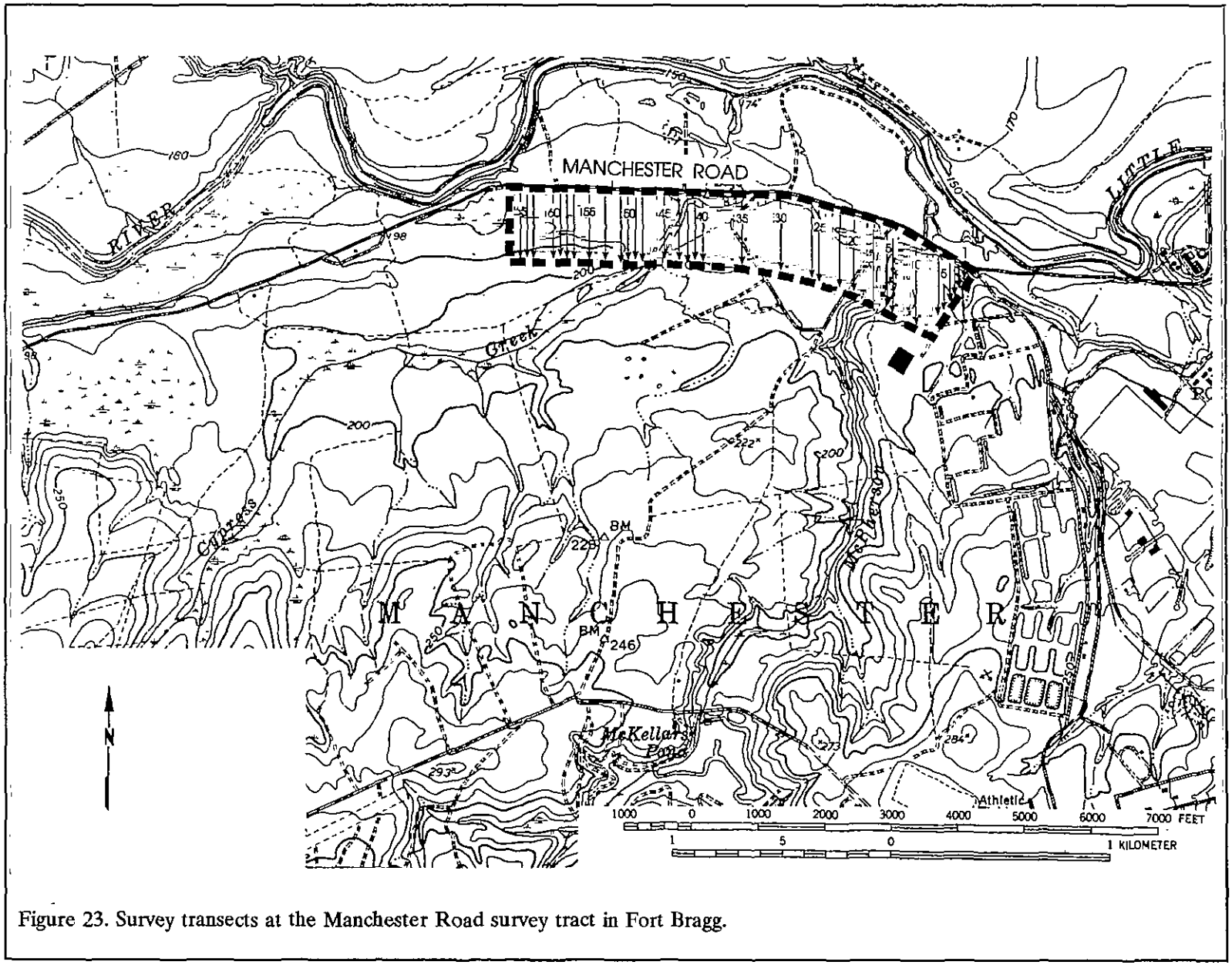


Figure 23. Survey transects at the Manchester Road survey tract in Fort Bragg.

One 50 by 50 cm test was to be excavated at each *site* to subsoil or a minimum of 100 cm (assuming subsoil was not reached). Profiles were to be drawn to scale and soil was to be described using a Munsell Soil Color designation. Photographs were to be taken using black and white and color transparency film.

At each *site*, a sketch map was to be drawn to scale showing the locations of shovel tests, test units, natural and man-made features, and datums. In addition, GPS positions were to be taken at all *sites*, and at each potentially eligible or eligible *site* a metal datum was to be established.

The GPS positions were taken with a Trimble GeoExplorer™ rover with *at least* one position recorded. Where possible, additional positions were taken since averaging provides some improvement on accuracy. These readings, as they stand, were all affected by what is called selective availability (S/A). This is the deliberate introduction of errors into the GPS measurements by the Department of Defense. This degradation results in horizonal errors of up to 100 m 95% of the time and vertical errors of up to 173 m 95% of the time.

There are other factors also affecting the accuracy of an uncorrected GPS reading and potentially make the range of error much greater than ±100 m. These include ionospheric and atmospheric delays which can affect the speed at which a signal is received on a given time of the day. While this speed can be predicted for an average day, changes in atmospheric conditions, which are out of the ordinary, can not be corrected. Other factors involving accuracy are the distance of a satellite above the horizon, the distance between satellites, the availability of the necessary number of satellites, and "multipath error." Multipath error means that the signal does not go directly to the receiver, but bounces off other objects before reaching the receiver.

GPS readings taken with S/A active can be corrected by comparing it to data collected simultaneously at a known location or base station.

Table 2.
UTM Coordinates for Sites in the Camp Mackall Drop Zone and Manchester Road Survey Tracts Using GPS with Selective Availability

| Site # | Positions Recorded | GPS N | GPS E | GPS Elevation* | Map Interpolation N | Map Interpolation E |
|---|---|---|---|---|---|---|
| 31CD455 | 205 | 3894486 | 677941 | +89 m | 3894490 | 677560 |
| 31CD456 | 163 | 3894434 | 677489 | +27 m | 3894510 | 678120 |
| 31SC66 | 221 | 3775199 | 640120 | +40 m | 3874860 | 639940 |
| 31SC68 | 286 | 3874940 | 640391 | +40 m | 3874880 | 641440 |
| 31SC71 | 205 | 3874981 | 641108 | +114 m | 3874980 | 641070 |
| 31SC72 | 260 | 3874795 | 639822 | +114 m | 3875130 | 641100 |
| 31SC75 | 246 | 3875755 | 640679 | +172 m | 3875800 | 640780 |
| 31SC87 | 210 | 3875276 | 641565 | +75 m | 3875300 | 641600 |
| 31SC88 | 204 | 3875023 | 641312 | +108 m | 3875040 | 641400 |
| 31SC91 | 244 | 3874783 | 639883 | +277 m | 3874800 | 639930 |
| 31SC92 | 218 | 3874749 | 640539 | +134 m | 3874750 | 640540 |
| 31SC93 | 244 | 3874293 | 640028 | +5 m | 3874330 | 640030 |
| 31SC94 | 2 | 3874251 | 640008 | +95 m | 3874750 | 639960 |
| 31SC95 | 201 | 3874856 | 640658 | +204 m | 3874880 | 640700 |
| 31SC96 | 341 | 387486 | 640281 | +138 m | 3874850 | 640310 |
| 31SC97 | 207 | 3874705 | 640071 | +33 m | 3874750 | 640120 |
| 31SC98 | 386 | 3874766 | 639980 | +124 m | 3874790 | 640030 |

* GPS determined altitude by height above the WGS-84 ellipsoid (HAE), not with respect to the mean sea level. The difference between the two can be great and conversion algorithms can have errors of greater than 5 m. Consequently, these figures are ignored.

Called differential correction (or DGPS), this was undertaken with the Fort Bragg and Camp Mackall data as postprocessing (Table 2). With correction, the theoretical accuracy may be ±5 m.

UTMs were also hand plotted and these positions are provided in Table 2. Comparing the DGPS and interpolated map coordinates reveal significant differences. While there are certainly problems recording positions in the woods, as any archaeologist will affirm, the interpolated positions have high levels of confidence since they are based on topographic features, distances and bearings to landmarks, and placement within well identified transects.

When compared, the DGPS locations are frequently on the wrong side of roads, or otherwise so misplaced that there can be no doubt that there are significant errors in these data. In all cases the hand plotted UTMs are considerable more accurate than the DGPS coordinates.

Even differential correction of GPS data may involve significant errors. For example, for every 10 km distance between the rover and base stations, there is a probable horizontal error of 1 m. Another problem may be that the elevation of the roving Trimble Explorer™ was the same as that of the base station, further degrading some readings. Further possible problems may include the number of satellites in view, the position of these satellites relative to each other, the strengths of their signals, and even the data processing methods. As Trimble observes, accuracy *can* range to over 300 meters.

Table 3.
Correlation of accession numbers with site numbers

| Site # | Acc. # | Site # | Acc. # | Site # | Acc.# |
|---|---|---|---|---|---|
| 31CD455 | 96115 | 31SC87 | 96123 | 31SC97 | 96109 |
| 31CD456 | 96116 | 31SC88 | 96124 | 31SC98 | 96110 |
| 31CD457 | 96117 | 31SC91 | 96103 | 31SC99 | 96111 |
| 31SC66 | 96118 | 31SC92 | 96104 | 31SC100 | 96112 |
| 31SC68 | 96119 | 31SC93 | 96105 | 31SC101 | 96113 |
| 31SC71 | 96120 | 31SC94 | 96106 | 31SC102 | 96114 |
| 31SC72 | 96121 | 31SC95 | 96107 | | |
| 31SC75 | 96122 | 31SC96 | 96108 | | |

The critical parameters used by the Chicora rover attempted to maximize both data quality and quantity, using the Trimble recommended default settings (for example, the PDOP mask, which is a indication of the accuracy of the GPS positions which are calculated, is set at 6, with PDOPs below 4 being excellent and above 8 being poor). The only changes we can immediately identify which might improve the quality of the DGPS data would be to schedule data collection times and satellites being used based on their almanac files in order to maximize precision. This, however, is a time consuming technique and also requires that field survey be scheduled around GPS data acquisition, which is not cost-effective. Consequently, we recommend that reliance continue to be placed on map interpolation as the primary site location technique.

Datums at potentially eligible sites consisted of a length of iron rebar with approximately 5 cm exposed above ground. An aluminum cap marked with the temporary site number was placed on top of the rebar. Permanent site numbers could not be used on the site datums since they had not yet been assigned by the North Carolina Office of State Archaeology.

No deviations from the original methodology described in the Scope of Work (other than those discussed above) occurred during the field work. No other unusual or expected problems occurred during the study which affects the quality of the data.

## Laboratory Methods

The cleaning of artifacts and cataloging of the specimens was conducted during rain days in the field and completed at Chicora laboratories in Columbia in early April 1996. The materials will be curated at Fort Bragg and have been cataloged using that institution's accessioning practices which are those used by the North Carolina Office of State Archaeology. Table 3 provides a list of permanent site numbers and their corresponding accession numbers as assigned by the North Carolina Office of State Archaeology. No specimens were identified which required conservation or stabilization. Specimens were packed in plastic bags and boxed. Field notes were prepared on pH neutral, alkaline buffered paper and photographic materials were processed to archival standards. All field notes, with archival copies, will also be curated with this facility.

Analysis methods focused on occupation spans, likely functions of the various sites, and changes in raw material preferences. For those sites which were prehistoric, diagnostic lithics and/or ceramics provided temporal information. The diagnostic lithic remains were compared to published typological descriptions for the various projectile points such as Coe (1952, 1964), Oliver (1981), and South (1959).

Two primary materials were identified in the lithic collections. One was quartz, which was usually a translucent white, but occasionally reddish, grayish, yellowish-brown, or clear. This material is found throughout the Carolina Piedmont and might have been obtained from

either veins or as cobbles in Piedmont river gravels. The other common material was classified simply as metavolcanic, meaning partially metamorphosed volcanic rocks. This might include flow banded rhyolite, porphyritic rhyolite, plain rhyolite, felsic tuff, welded vitric tuff or breccia tuff.

Debitage categories included primary (defined as flakes with 90% or more cortex), secondary (defined as having 1% to 90% cortex), interior (defined as having no cortex). More refined categories, where they are used, follow the definitions offered by Blanton. et al. (1986) and Oliver et al. (1986).

At the survey level tools are defined very simply, being placed in broad morphological categories. Our laboratory methods, for example, define a biface as an artifact with flakes removed on both sides (not distinguishing between preforms, early stage reductions, and so forth); a core is a piece of raw material from which flakes have been removed; an end scraper is a blade tool with at least one convex end which exhibits a steep angle; a used flake is a chip of stone that was used as a tool, exhibiting edge damage or wear; and a side scraper is a flake tool in which one of the long edges was retouched to serve as the scraping edge.

Pottery examples were compared to typological descriptions provided by Coe (1964), Loftfield (1976), and South (1959) for the south coastal region and the North Carolina Piedmont. They were also compared to the type descriptions offered by Phelps (1983) for the north coastal region.

# RESULTS OF SURVEY

## Introduction

The cultural resources identified during the intensive survey of the 230 ha Camp Mackall Drop Zone at Fort Bragg consist of 15 archaeological sites and four isolated occurrences (Table 4, Figures 24 and 25). Of these resources, one of the archaeological sites (31SC88) is recommended as potentially eligible for inclusion on the National Register of Historic Places. The remaining 14 sites and four isolated occurrences are recommended as not eligible.

The cultural resources identified during the intensive survey of the 70 ha Manchester Road survey tract consist of two archaeological sites and one isolated occurrence, none of which were previously recorded. All of these resources are recommended as not eligible for inclusion on the National Register of Historic Places and no additional testing is recommended.

Five of the cultural resources identified during the intensive survey contained both prehistoric and historic components. These sites were found in both the Camp Mackall Drop and Manchester Road survey areas. The historic component of these sites, by convention of the North Carolina Archaeology Branch, are designated by ** following the site number. The prehistoric component is designated by the site number alone.

Table 4.
Archaeological Sites Identified at Camp Mackall Drop Zone and Fort Bragg

| Site Number | Components | Artifacts | Size (m²) | Quadrangle | Eligibility |
|---|---|---|---|---|---|
| | *Camp Mackall Drop Zone Survey* | | | | |
| 31SC66/66** | Lithic/Yadkin/Historic | 216 | 1,300 | Pinebluff | NE |
| 31SC68 | Savannah/Yadkin | 414 | 6,100 | Pinebluff | NE |
| 31SC71 | Morrow Mountain/ Hanover/Yadkin/ Adam's Creek | 455 | 8,100 | Pinebluff | NE |
| 31SC72 | Lithic/Hanover/Yadkin | 123 | 1,400 | Pinebluff | NE |
| 31SC75 | Guilford/Morrow Mountain | 110 | 1,400 | Pinebluff | NE |
| 31SC87/87** | Lithic/Historic | 203 | 2,100 | Pinebluff | NE |
| 31SC88 | Hardaway/Big Sandy/ Kirk/Morrow Mountain/ Guilford/Gypsy/ Caraway/Yadkin | 674 | 21,600 | Pinebluff | PE |
| 31SC91 | Lithic | 39 | 200 | Pinebluff | NE |
| 31SC92 | Lithic | 3 | 350 | Pinebluff | NE |
| 31SC93 | Lithic | 24 | 80 | Pinebluff | NE |
| 31SC94 | Lithic | 18 | 80 | Pinebluff | NE |
| 31SC95 | Lithic | 201 | 700 | Pinebluff | NE |
| 31SC96/96** | Lithic/Historic | 86 | 4,500 | Pinebluff | NE |
| 31SC97 | Lithic | 57 | 900 | Pinebluff | NE |
| 31SC98/98** | Morrow Mountain/Historic | 90 | 500 | Pinebluff | NE |
| 31SC99 | Isolated lithic | 1 | 1 | Pinebluff | NE |
| 31SC100 | Isolated Yadkin | 1 | 1 | Pinebluff | NE |
| 31SC101 | Isolated lithic | 1 | 1 | Pinebluff | NE |
| 31SC102 | Isolated lithic | 1 | 1 | Pinebluff | NE |
| | *Manchester Road, Fort Bragg Survey Tract* | | | | |
| 31CD455** | Historic | 6 | 200 | Overhills | NE |
| 31CD456 | Lithic | 11 | 400 | Overhills | NE |
| 31CD457 | Isolated lithic | 1 | 1 | Overhills | NE |

## Revisited Archaeological Sites

### 31SC66/31SC66**

Site 31SC66/31SC66** is located about 1,830 m west of U.S. highway 15/501 and 350 m

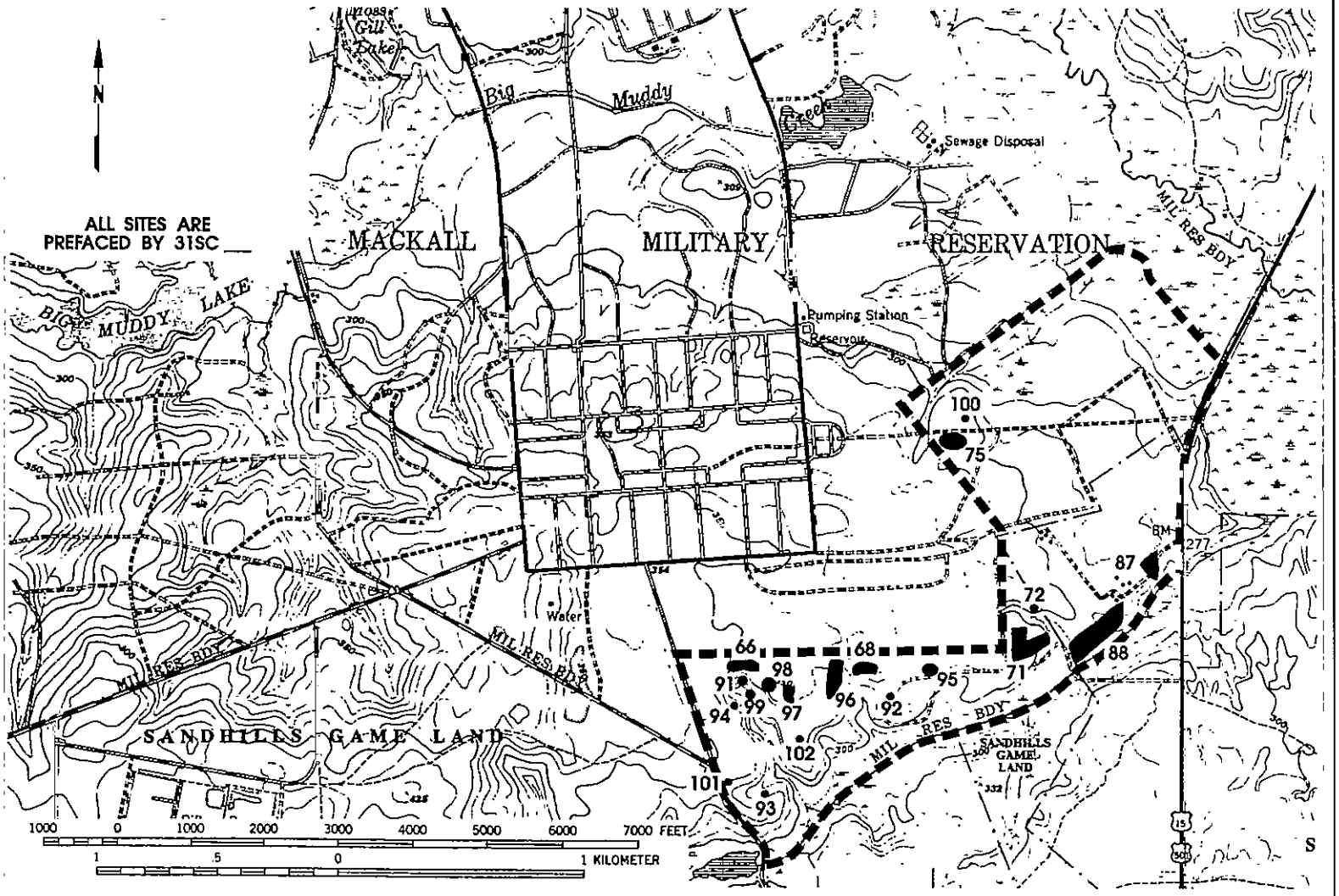


Figure 24. Archaeological sites (including isolated occurrences) found in the Camp Mackall Drop Zone Survey area (all sites are prefaced by 31SC).

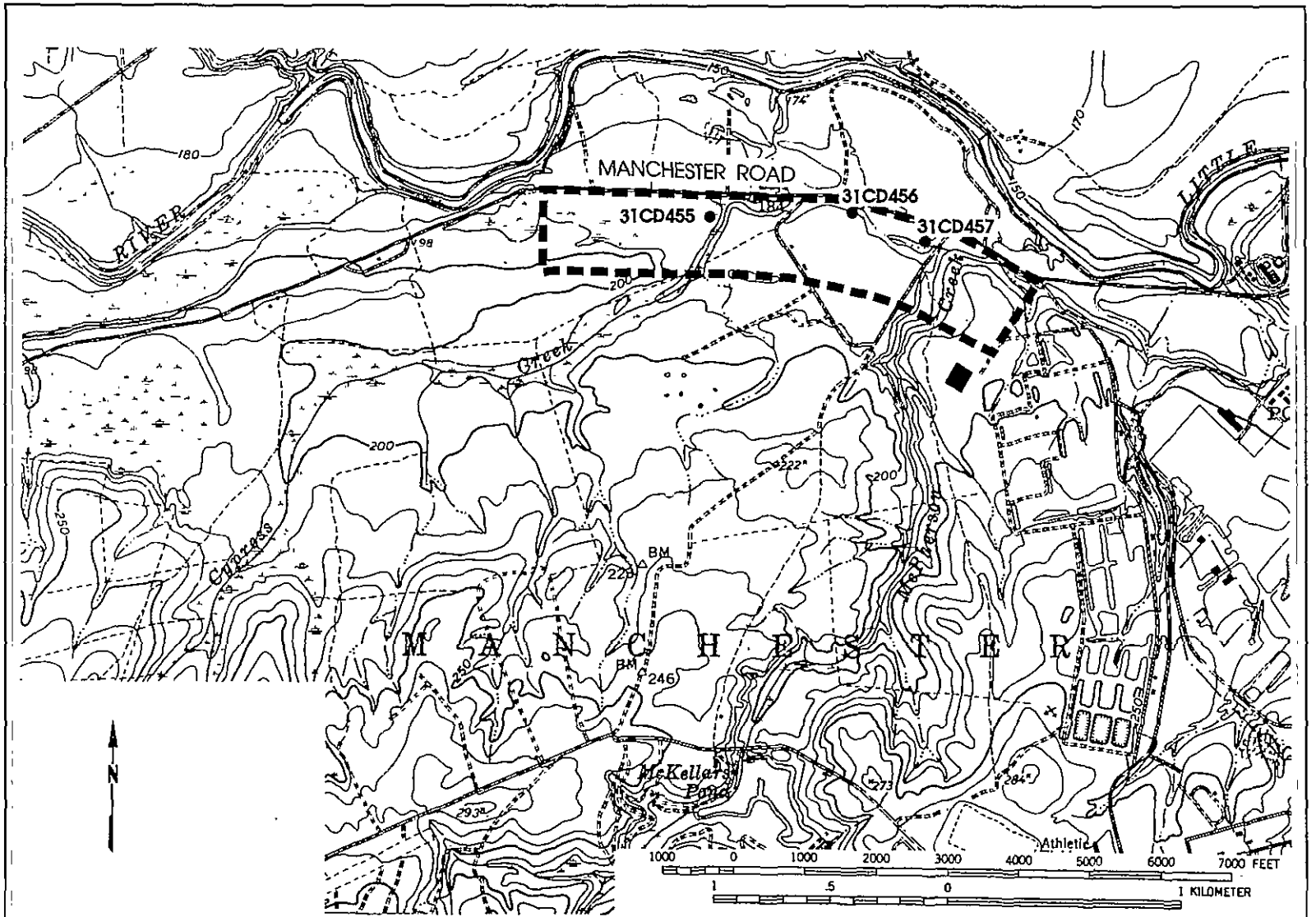


Figure 25. Archaeological sites (including isolated occurrences) found in the Manchester Road survey tract.

south of the southernmost east-west runway of the Camp Mackall Drop Zone survey tract. The central UTM coordinates are N3874860 E639940. The site is situated approximately 140 m north of an intermittent drainage flowing south into Beaver Dam Creek. The nearest modern permanent source of water is Beaver Dam Creek, about 800 m to the south. The elevation at the site is 92 m and while the site includes small wind-blown dunes, the topography is more characteristic of a small ridge overlooking the intermittent drainage. Based on the current survey, the site appears to incorporate about 1,300 $m^2$ and measures about 90 by 25 m (Figure 26).

The site was originally identified by Loftfield (1979:G-54) who surface collected 36 flakes. No subsurface testing was performed and he recommended that no further work need be performed at this site.

Vegetation at the site consists of very sparse grass. Consequently, surface visibility is near 100%. The site was initially revealed by surface materials on pedestrian transect lines.

A controlled surface collection was made based on two 30 m square collection units (identified as CU 1 and CU 2 in Figure 26). No surface remains were identified beyond 60 m east-west and 20 m north-south, although 208 artifacts were collected from these two collection units.

Collection unit 1 contained a total of 184 artifacts. Prehistoric artifacts included 12 secondary quartz flakes, 137 secondary metavolcanic flakes, one Yadkin Fabric-Impressed sherd, three small sherds (probably also Yadkin), three biface fragments (one quartz and two metavolcanic), and one scraper. Measurements for the scraper are: length - 33.91 mm; width - 29.34 mm; thickness - 8.11 mm; and angle - 64 degrees (Figure 45 F). Historic artifacts included 27 clear bottle glass fragments (representing specimens of Pepsi and Pittman Beverage containers).

Collection unit 2 contained a total of 24 artifacts. Prehistoric artifacts included two secondary quartz flakes and 18 secondary metavolcanic flakes. Historic artifacts included one modern brown glass fragment, two modern green glass fragments, and one historic stoneware sherd. No artifacts were found in collection units 3 or 4, situated to the east and west of the site core.

A 50 cm test unit was centrally placed at N200E200 and all subsurface testing was conducted from that location. The test pit yielded no remains and the profile revealed 60 cm of strong brown (7.5YR5/8) sand, characteristic of the C horizon subsoils in the project area (Figure 26).

A total of 34 shovel test pits were excavated in cardinal directions and placed at 10 m to 15 m intervals in and around the site core. All shovel tests exceeded 50 cm in depth. Five (N190E175, N190E185, N200E235, N200E245, and N200E255) yielded a total of eight secondary metavolcanic flakes. Subsurface remains from these test pits expanded the site from 60 m in width to a total of 90 meters in width.

The soils from this site are classified as Lakeland sands. The C2 horizon, a strong brown (7.5YR5/8) sand typically begins at 38 cm and runs to 1.12 m below surface. This would indicate that a tremendous amount of erosion and deflation has occurred at the site. As further evidence of environmental impacts upon the site, the current survey recovered nearly six times as many artifacts as Loftfield's (1979) survey, including a number of historic artifacts which should have pre-dated his study. While it is possible that Loftfield simply conducted a "grab" collection at this site, a comparison of the artifact assemblages coupled with the soil profile at the site, suggests that, like many areas of the Mackall Drop Zone, deflation of the soils with the concentration of archaeological materials in smaller vertical zones continues on a daily basis. This is probably the reason for the large amount of artifacts collected and recovered during the current study.

While the lithics are not diagnostic, the site has produced small quantities of Middle Woodland Yadkin pottery. The historic remains appear to date from the past 50 years. These factors, coupled with the severe erosion/deflation of the site, suggests that it is unlikely to be able to answer significant research questions concerning

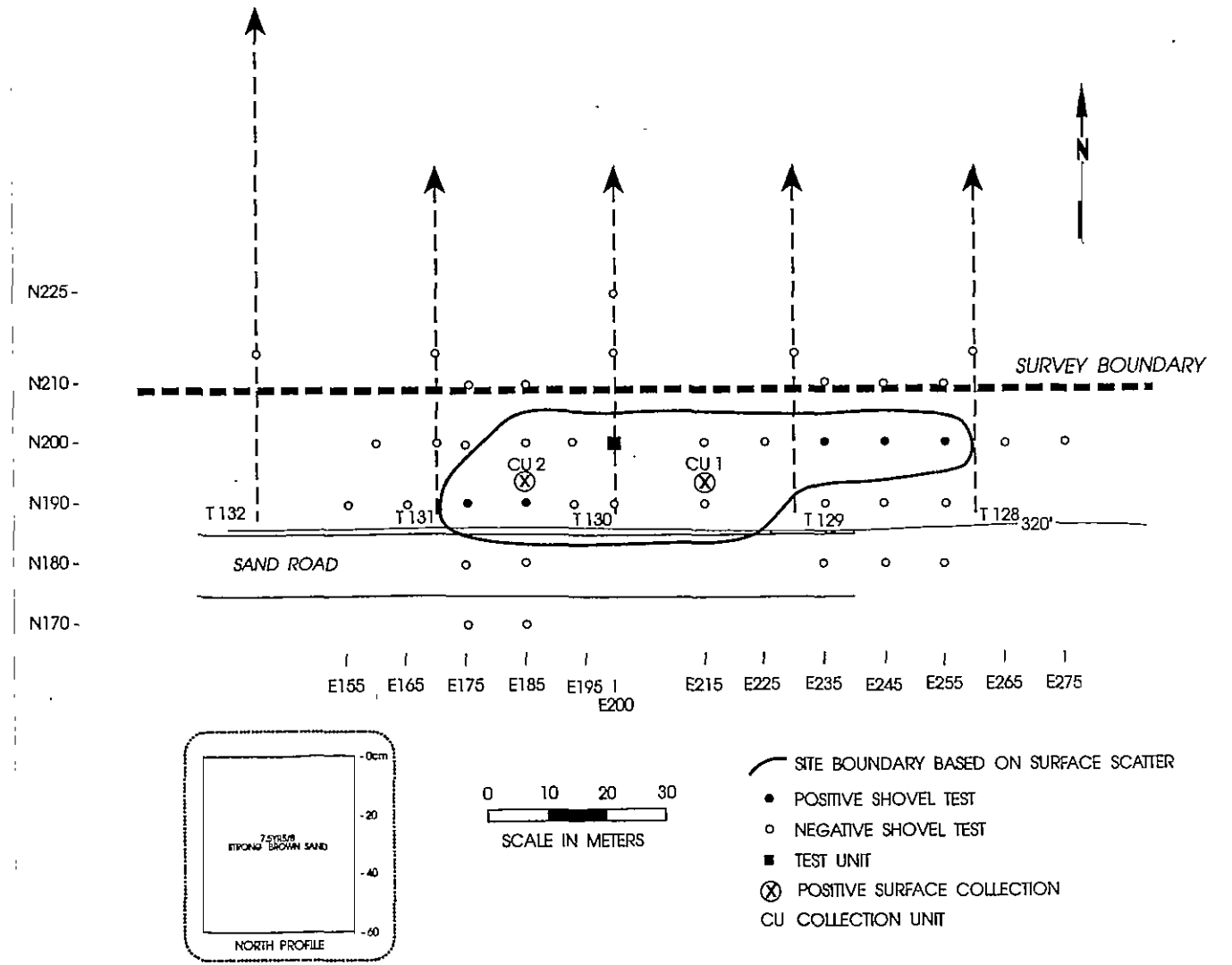


Figure 26. Map of 31SC66/31SC66** and test unit profile.

the prehistoric or historic peoples of the area. The information the site can contribute regarding settlement has been obtained by the current study. As a result, 31SC66/31SC66** is recommended as not eligible for inclusion on the National Register of Historic Places. While such a recommendation precludes the *requirement* for further research, it would be appropriate to periodically collect the site, maintaining the same 30 m control used in this survey for consistency.

### 31SC68

Site 31SC68 is located about 1,290 m west of U.S. highway 15/501 and 310 m south of the southernmost east-west runway of the Camp Mackall Drop Zone survey tract. The central UTM coordinates are N3874880 E640440. The site is located on an upland slope overlooking an intermittent drainage to the south. The slope toward this drainage is steep and heavily eroded.

The pedestrian survey revealed that all along this slope strong brown (7.5YR5/8) sand, characteristic of the C horizon soils of this area, was exposed. This indicates that upwards of 0.4 m of soil has eroded from this slope. Sand roads are found to the west, as well as at the toe of the southern slope, at the edge of the drainage (Figure 27). These roads also reveal the extensive erosion and re-deposition of sands which typify much of this area.

The site is situated at the edge of the survey tract. The heavily eroded southern slope was found to be within the survey tract, while the more "upland" portion of the site was judged to be outside the current project boundaries. It was only on scattered, and small, portions of this upland area that soils more characteristic of remnant A or B horizons were identified.

The nearest source of permanent water is Beaver Dam Creek, located 250 m to the south. The elevation at the site is approximately 92 m and the site measures about 70 m east-west by 100 m north-south. The site encompasses about 6,100 $m^2$.

The site was originally identified by Loftfield (1979:G-55) who collected three used flakes, seven grit tempered sherds, and 214 flakes. No subsurface testing was conducted, but it was recommended.

Vegetation at the site consists of sparse grass, which in conjunction with the heavy erosion, provided excellent visibility. The site was first encountered during a pedestrian survey and a controlled surface collection was made using a numerically designated 30 m grid. A total of 414 artifacts were collected in a 65 m east-west by 100 m north-south area encompassing 11 collection units (Figure 27).

Collection Unit 1 contained a total of 34 artifacts. Artifacts collected included eight secondary quartz flakes, one primary metavolcanic flake, and 25 secondary metavolcanic flakes.

Sixty artifacts were collected from Collection Unit 2. Artifacts collected include 11 secondary quartz flakes, one primary metavolcanic flake, 44 secondary metavolcanic flakes, and four small sherds, probably representing Yadkin wares.

Collection Unit 3 produced 184 artifacts. These included 16.11 g of raw material, two primary quartz flakes, 67 secondary quartz flakes, 112 secondary metavolcanic flakes, and one used flake which appears to have been struck off a core and partially worked in an unsuccessful effort to produce a possible Savannah River projectile point.

Twelve artifacts were collected from Collection Unit 4, including 10 secondary quartz flakes and 2 secondary metavolcanic flakes. Collection Unit 5 produced 69 artifacts — three secondary quartz flakes, one primary metavolcanic flake, and 65 secondary metavolcanic flakes. Collection Unit 6 contained a total of 36 artifacts. These included two secondary quartz flakes and 34 secondary metavolcanic flakes. Collection Unit 7 produced a total of five secondary metavolcanic flakes. Six artifacts were collected from Collection Unit 8. These included two secondary quartz flakes and four secondary metavolcanic flakes.

Collection Unit 9 produced two artifacts — a secondary quartz flake and one secondary

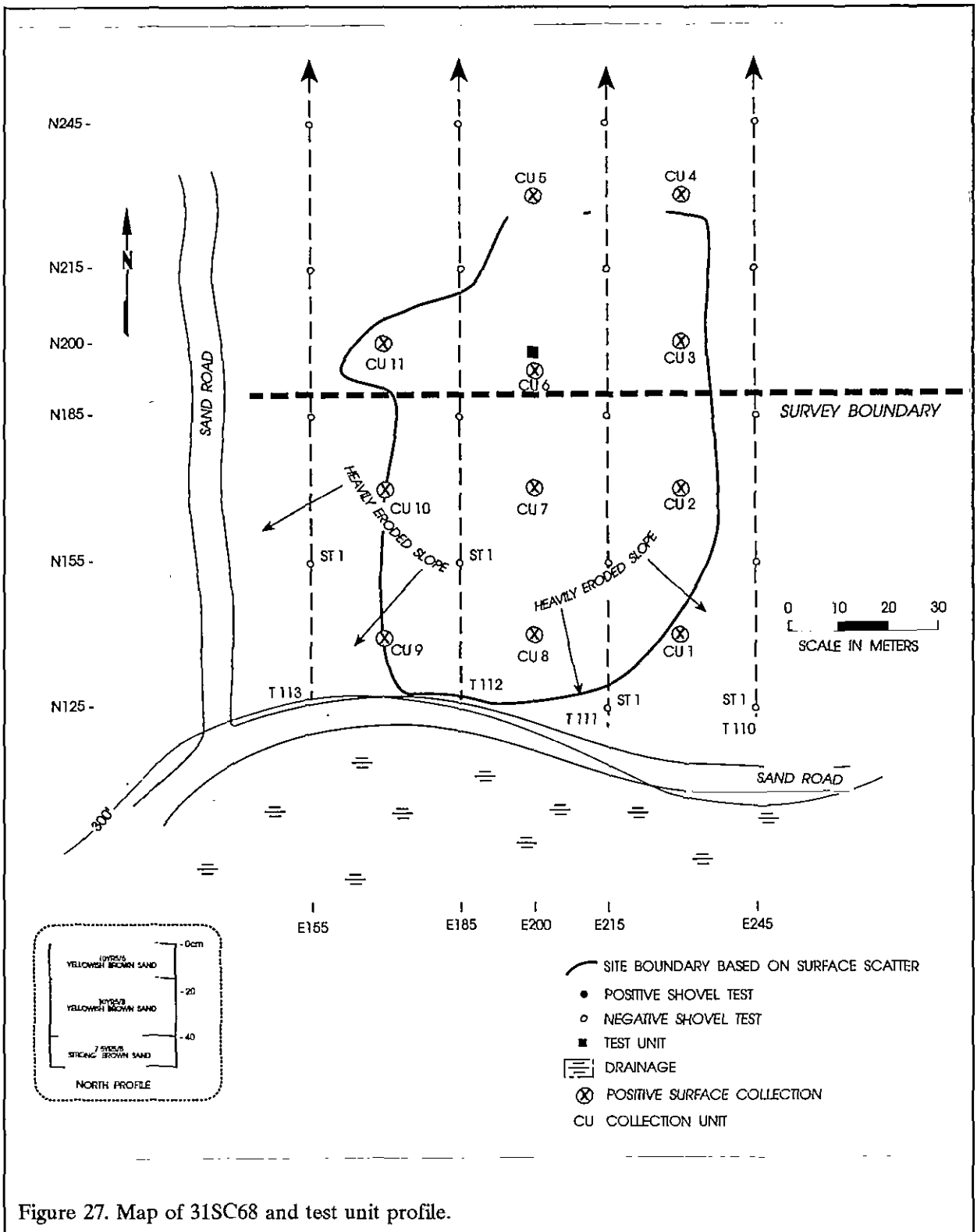


Figure 27. Map of 31SC68 and test unit profile.

metavolcanic flake. Collection Unit 10 contained a total of four secondary metavolcanic flakes. A total of two artifacts, one primary quartz flake and one secondary quartz flake, were collected from Collection Unit 11.

A 50 cm test unit was placed in the only area of intact soil, which happened to be outside the survey boundaries. Elsewhere, however, it was clear from the surface exposure that only C horizon soils were left. No artifacts were recovered from the test, although the nearby collection units produced relatively large quantities of surface remains.

The soil profile of the test unit consisted of 15 cm of yellowish brown (10YR5/6) sand overlying 25 cm of yellowish brown (10YR5/8) sand. This overlay 10 cm of strong brown (7.5YR5/8) sand (Figure 27).

The soils at this site are classified as Lakeland sands. These typically contain a C2 horizon of strong brown (7.5YR5/8) sands at depths ranging from 38 cm to 1.12 m below surface. The occurrence of strong brown (7.5YR5/8) sands at 50 cm below surface suggests that the site has been either heavily impacted by military operations within the area or has suffered extraordinary deflation. About 75% of the site has been eroded into the C horizon. An additional 20% has been eroded into what appears to be the B horizon. Only about 5% of the site, in the immediate vicinity of the test unit, exhibits spotty remnants of the A horizon.

The only diagnostic artifacts collected from the site were a metavolcanic Savannah River Stemmed point and four small grit tempered sherds (possibly representing Yadkin Series pottery). This would indicate that the site dates from the Late Archaic into perhaps the Middle Woodland and may have possibly functioned as a limited activity site. No diagnostic artifacts were recovered from the site's test unit or from the seven shovel tests excavated during the running of transect lines (which we extended beyond the survey boundary in order to encompass this site). In addition, the site is highly eroded, note that there was only one area of intact soils present for the excavation of the test unit, and other than the Savannah River point data sets were limited to non-diagnostic lithic debitage and small sherds.

Based on these factors, we recommend this site as not eligible for inclusion on the National Register of Historic Places. The primary information potential of the site, its ability to contribute to settlement models, has been achieved during the current study through its recordation and collection. No further research appears warranted.

## 31SC71

Site 31SC71 is located 500 m west of US 15/501 and is just to the north of the northernmost east-west sand road running through the tract south of the drop zone. The central UTM coordinates are N3874980 E641070. The site is located west of an intermittent stream and intersected by a small drainage. The closest source of permanent water is Beaver Dam Creek which is found approximately 200 m to the south. The elevation at the site is 92 m and it measures about 140 m east-west by 110 m north-south, taking on something of boot-shape. The site encompasses about 8,100 $m^2$ (Figure 28).

The site was originally identified by Loftfield (1979:G-55) who collected one biface fragment, 36 heavy grit tempered sherds, and 43 flakes. No subsurface testing was done and no further work was recommended at the site.

Vegetation at the site consists of moderate to sparse grass, which provided approximately 60 to 100% visibility. The site was first encountered during the pedestrian survey, although one transect shovel test (T90, ST6) produced five flakes in the upper 30 cm.

A controlled surface collection was made using a numerically designated 30 m grid. These remains were collected in a 140 m east-west by 120 m north-south area (Figure 28). The surface collection recovered a total of 433 artifacts which are tabulated in Table 5.

The collection produced two projectile

Table 5.
Artifacts Recovered from Collection Units at 31SC71

| | CU1 | CU2 | CU3 | CU4 | CU6 | CU7 | CU8 | CU9 | CU10 | CU12 | CU13 | CU15 | CU16 | CU17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Flakes | | | | | | | | | | | | | | |
| Quartz, primary | 1 | 2 | | | | | | 1 | | | | | | |
| Quart, secondary | 5 | 5 | 10 | 1 | | 1 | 2 | | | | 1 | 5 | 49 | 4 |
| Metavol, primary | 1 | | 2 | | | | | | | | | 1 | | 2 |
| Metavol, secondary | 112 | 18 | 38 | 1 | 2 | 1 | 1 | | 1 | 10 | | 43 | 65 | 2 |
| Sherds | | | | | | | | | | | | | | |
| Yadkin Cord Marked | 3 | | | | | | | | | | | | 2 | |
| Hanover Cord Marked | 1 | | | | | | | | | | | | | |
| Hanover Fabric Imp. | | | | | | | | | | | | 1 | | |
| Small | 19 | 4 | 2 | | | | | | | | | 2 | 1 | |
| Projectiles | | | | | | | | | | | | | | |
| Morrow Mountain | 2 | | | | | | | | | | | | | |
| Scraper | | | | | | | | | | | | 1 | | |
| Raw Material | 2 | 1 | | | | | | | | | | 3 | | |
| Bone fragments | | | 2 | | | | | | | | | | | |

Metavol. = Metavolcanic

points, both Morrow Mountain types. One, a fairly "classic" Morrow Mountain II variety, measures 31.34 mm in length and 20.66 mm in width. It is 6.95 mm in thickness (Figure 44 I). The other, closer to a Morrow Mountain I variety, measures 59.52 mm in length, 26.96 mm in width, and 9.55 mm in thickness (Figure 44 D). This point is somewhat similar to the "Lake Mohave" points previously reported by Coe (1964:Figure 32c) for the North Carolina Piedmont. While the application of Southwestern typologies to points in the Southeast can legitimately be questioned, the current survey can only mention the resemblance. We cannot hope to address the underlying issues.

Also present was a single metavolcanic end scraper, measuring 44.67 mm in length and 30.45 mm at its widest point. The thickness is 10.90 mm and the weight of the specimen is 11.20 g. The edge angle is calculated to be 47° (Figure 45 E). The pottery recovered from the surface collection represents either Middle Woodland Yadkin or Hanover wares.

A 50 cm test unit was centrally placed in the main portion of the site. This unit yielded a total of 17 artifacts. These included five secondary metavolcanic flakes from 0 cm to 30 cm, one sherd and three metavolcanic flakes from 30 cm to 40 cm in depth, two secondary metavolcanic flakes from 40 cm to 50 cm, and two prehistoric sherds from 50 cm to 70 cm. The test unit was excavated to a depth of 90 cm.

The sherds from this unit are of special interest since they most closely resemble Loftfield's (1976:164-166) Adam's Creek Series (Figure 46 I-K). This, of course, seems to be the southern equivalent of Phelps' (1980:48-50, 1983:43-44) Cashie Series found in the Tuscarora heartland. The sherds exhibit a fine, well compacted paste with no obvious sand inclusions. This is consistent with at least one variety of both Adam's Creek and Cashie. The sherds are incised, with several exhibiting small dot-like punctations. Although this surface treatment is not discussed by Loftfield, he does illustrate one such sherd (Loftfield 1976:Plate 8). Significantly, this illustration also reveals that the rims were at least occasionally notched, another characteristic of the sherds recovered from 31SC71. These specimens may represent a Late Woodland to perhaps contact period occupation.

The test unit soil profile consisted of 90 cm of strong brown (7.5YR5/6) sand (Figure 28), indicating deflation into the C horizon. Elsewhere, up to 18 cm of dark brown (10YR3/3) sand, suggestive of a remnant Ap horizon, was found,

An additional 59 shovel tests were excavated in a cardinal grid pattern at 15 m intervals (Figure 28). All shovel tests were excavated to depths ranging from 50 to 75 cm below surface. None of these tests produced any evidence of subsurface remains.

The soils on this site are classified as Lakeland sands. Although there are slight differences in the soil description, which may be due to extenuating factors such as light and personal bias, the Ap horizon seem to be intact and reflect very well the description given by Horton (1967:13). The current survey again recovered considerably more artifacts than the earlier CZR study (Loftfield 1979:G-55). While

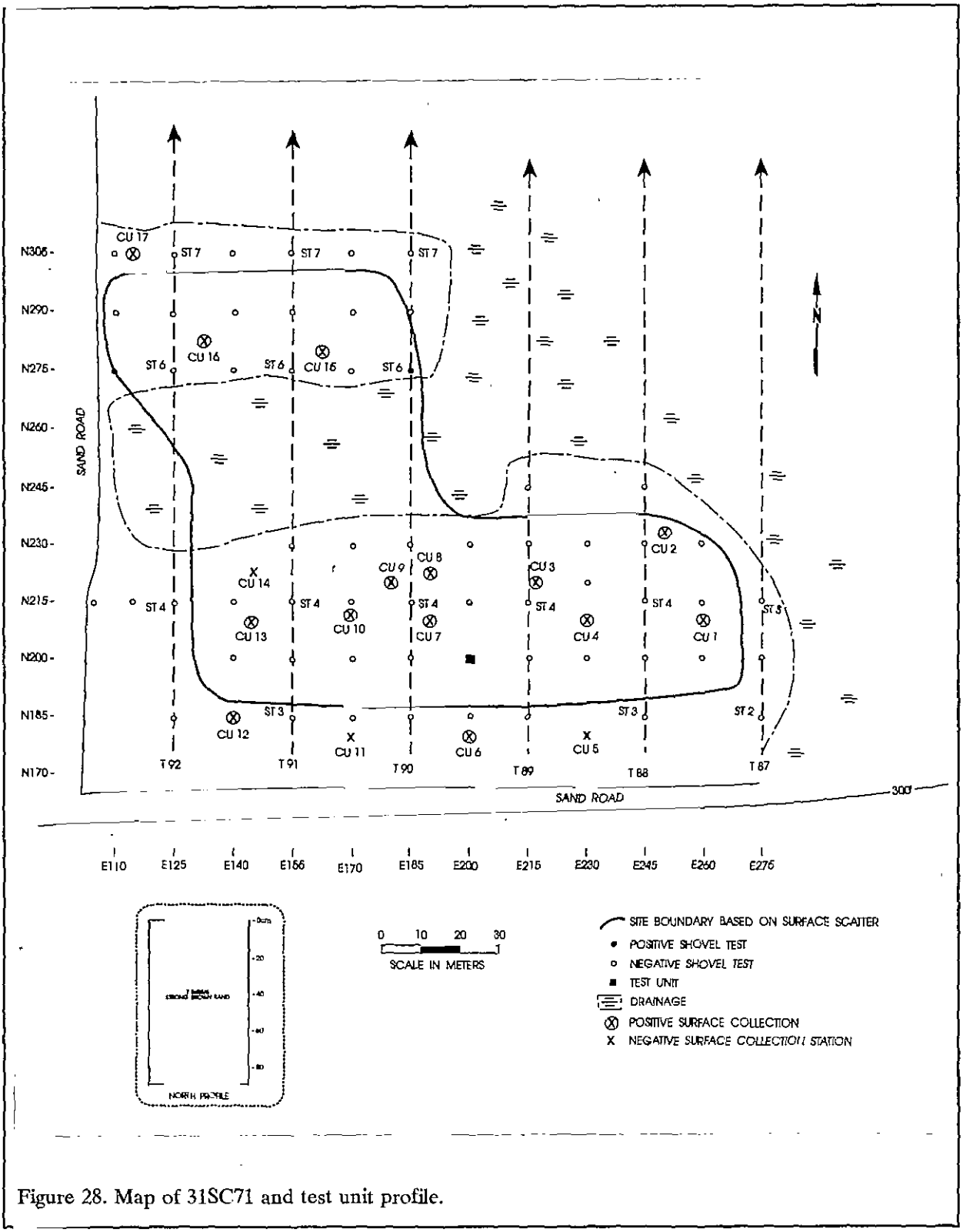


Figure 28. Map of 31SC71 and test unit profile.

this may reflect differences in the intensity of the two surveys, it seems likely that the heavily deflated condition of the site is also a contributing factor.

Evaluation of this site is made difficult by a combination of features. There are some site areas with intact A horizon soils and the test unit revealed artifacts to nearly 70 cm. Curiously, however, the sherds found at these depths all seemingly date to the Late Woodland or perhaps even early contact periods. This may suggest some considerable degree of bioturbation. The site is also situated on the edge of a sandy ridge overlooking lowland swamp drainages — a setting where such sites are commonly found.

There are a variety of research questions which *might* be appropriate at this site. Certainly, further examination to determine the extent and function of the Late Woodland occupation is very appropriate. With relatively few Tuscarora sites found in this area of North Carolina, the potential for 31SC71 to further our understanding of the Late Woodland is very significant.

Yet there should be lingering concern that however significant the research questions, 31SC71 may simply not be "up" to addressing them. There is considerable evidence for deflation and erosion, and, among all of the shovel tests excavated, only one was positive.

Consequently, we recommend this site as not eligible for inclusion on the National Register of Historic Places. Although such a recommendation, if accepted by the Army and the State Historic Preservation Office, precludes the need to conduct any additional study at the site, it might be appropriate to periodically surface collect the area, maintaining the original 30 meter grid collection unit designations used during this study.

### 31SC72

Site 31SC72 is located about 630 m west of US 15/501 and 310 m north of the southern boundary of Camp Mackall. The central UTM coordinates are N3875130 E641100. The site is located on an open sand ridge with a sideslope to the south, where a small drainage finger is situated. Beyond the drainage is a sand road. The eastern and northeastern portions of the site have been destroyed by the construction of what appears to be a drainage ditch (Figure 29).

The closest source of water is Beaver Dam Creek located 400 m to the south. The elevation at the site is 92 m and the boundaries, established by the surface collections, are 35 m east-west by 60 m north-south, although the total site size is only about 1,400 $m^2$.

The site was originally identified by Loftfield (1979:G-56) who collected only two grit tempered sherds. No subsurface testing was performed and no further work was recommended.

There is essentially no vegetation in the site area which made for excellent visibility. Like the majority of other sites in Camp Mackall, 31SC72 was first encountered through the presence of materials "pedestalled" on the ground surface. No remains were encountered in any of the transect shovel tests.

A controlled surface collection, made using a numerically designated 30 m grid, recovered 121 artifacts. Collection Unit 1 produced 17 artifacts, including three secondary quartz flakes, one primary metavolcanic flake, and 13 secondary metavolcanic flakes. Collection Unit 2 yielded a total of 20 artifacts. These included one secondary quartz flake, 15 secondary metavolcanic flakes, three unidentified bone fragments, and one biface. One secondary metavolcanic flake was collected from Collection Unit 3. Collection Unit 4 yielded a total of 83 artifacts. These included one primary quartz flake, eight secondary quartz flakes, 58 secondary metavolcanic flakes, nine small sherds, two Hanover Fabric Impressed sherds, one Yadkin Cord Marked sherd, three examples of what may heavily tempered Yadkin Fabric Impressed sherds, and one animal bone.

A 50 cm test unit was centrally placed in an area which contained the highest concentration of artifacts. This unit yielded a total of two secondary metavolcanic flakes between 20 cm and 30 cm in depth. The test unit was excavated to a

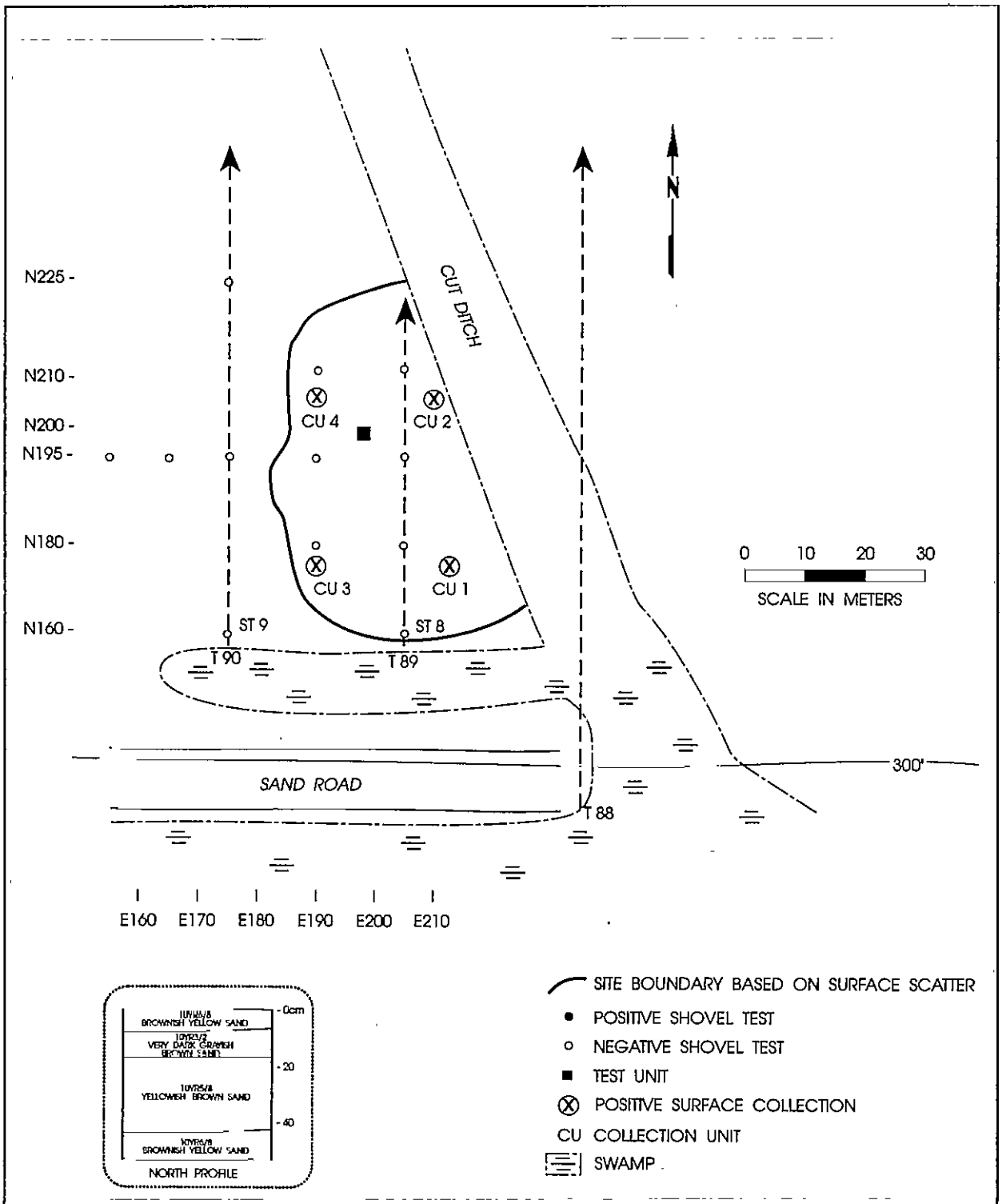


Figure 29. Map of 31SC72 and test unit profile.

total depth of 50 cm. The test unit soil profile reveals 7 cm of brownish yellow (10YR6/8) sand overlying 8 cm of very dark grayish brown (10YR3/2) sand. This overlies 15 cm of yellowish brown (10YR5/8) sand on top of a brownish yellow (10YR6/8) sand (Figure 29). The soils are classified as Wagram loamy sand.

Designating the northeast corner of the test unit as N200E200, an additional seven shovel tests were excavated in a cardinal grid pattern at 15 m intervals. All of these tests were excavated to depths ranging from 50 to 75 cm. No artifacts were recovered during close interval testing.

While a relatively large number of artifacts were recovered from the surface, including a collection of Middle Woodland ceramics and one tool, it is clear that the site is deflated throughout, largely it seems by wind action, is heavily eroded on its southern edge, and that about 20% has been destroyed by the construction of an adjacent ditch. In addition, only two artifacts, both small secondary flakes subject to bioturbation, were found below the ground surface.

Although the co-occurrence of Yadkin and Hanover wares is of chronological interest and the presence of the very heavily tempered pottery is of typological interest, it seems unlikely that this site has the integrity to address meaningful research in these areas. Consequently, the site is recommended as not eligible for inclusion on the National Register of Historic Places and no further investigations are recommended.

### 31SC75

Site 31SC75 is located 1,020 m west of US 15/501. The site is bordered to the north by the main east-west road in the drop zone study area. Along the site's eastern edge is a north-south running sand road, beyond which are planted pines. A small intermittent drainage of Drowning Creek swamp is located north and west of the site. The central UTM coordinates are N3875800 E640780. The site is located on a small ridge nose overlooking the lowland drainage, with Drowning Creek approximately 1,400 m to the northeast. The elevation at the site is 92 m and, based on the surface collection, the site measures about 40 m east-west by 90 m north-south. It encompasses about 1,400 m$^2$ (Figure 30).

The site was originally identified by Loftfield (1979:G-56) who collected seven heavy grit tempered sherds and 31 flakes. No additional testing was recommended on the basis of these findings.

There is very little vegetation in the site area, allowing excellent visibility. In fact, the site was first encountered in the pedestrian survey associated with shovel testing (and no artifacts were collected from the transect shovel tests).

A controlled surface collection was made using a numerically designated 30 m grid. The surface collection recovered a total of 110 artifacts. Collection Unit 1 yielded 15 artifacts. These included 12 secondary metavolcanic flakes, one broken biface, and two mending portions of a transversely fractured Guilford projectile point. The measurements for the Guilford point are: incomplete length - 69.47 mm (estimated complete length is 80.55 mm), width - 24.45 mm, and thickness - 10.82 mm.

Collection Unit 2 contained a total of 24 artifacts. These included three secondary quartz flakes, one primary metavolcanic flake, 19 secondary metavolcanic flakes, and one Morrow Mountain I projectile point. Measurements for the Morrow Mountain point are: length - 39.89 mm, width 21.97 mm, and thickness 9.76 mm.

Collection Unit 3 contained 31 artifacts. These included seven secondary quartz flakes, 22 secondary metavolcanic flakes, and two small sherds. Collection Unit 4 contained 16 artifacts, consisting of two secondary quartz flakes and 14 secondary metavolcanic flakes. Eight artifacts were found in Collection Unit 5. These included two secondary quartz flakes, five secondary metavolcanic flakes, and one small sherd. Collection Unit 6 contained a total of 16 artifacts, including three secondary quartz flakes, 12 secondary metavolcanic flakes, and one transversely fractured proximal portion of a Morrow Mountain II projectile point. This point

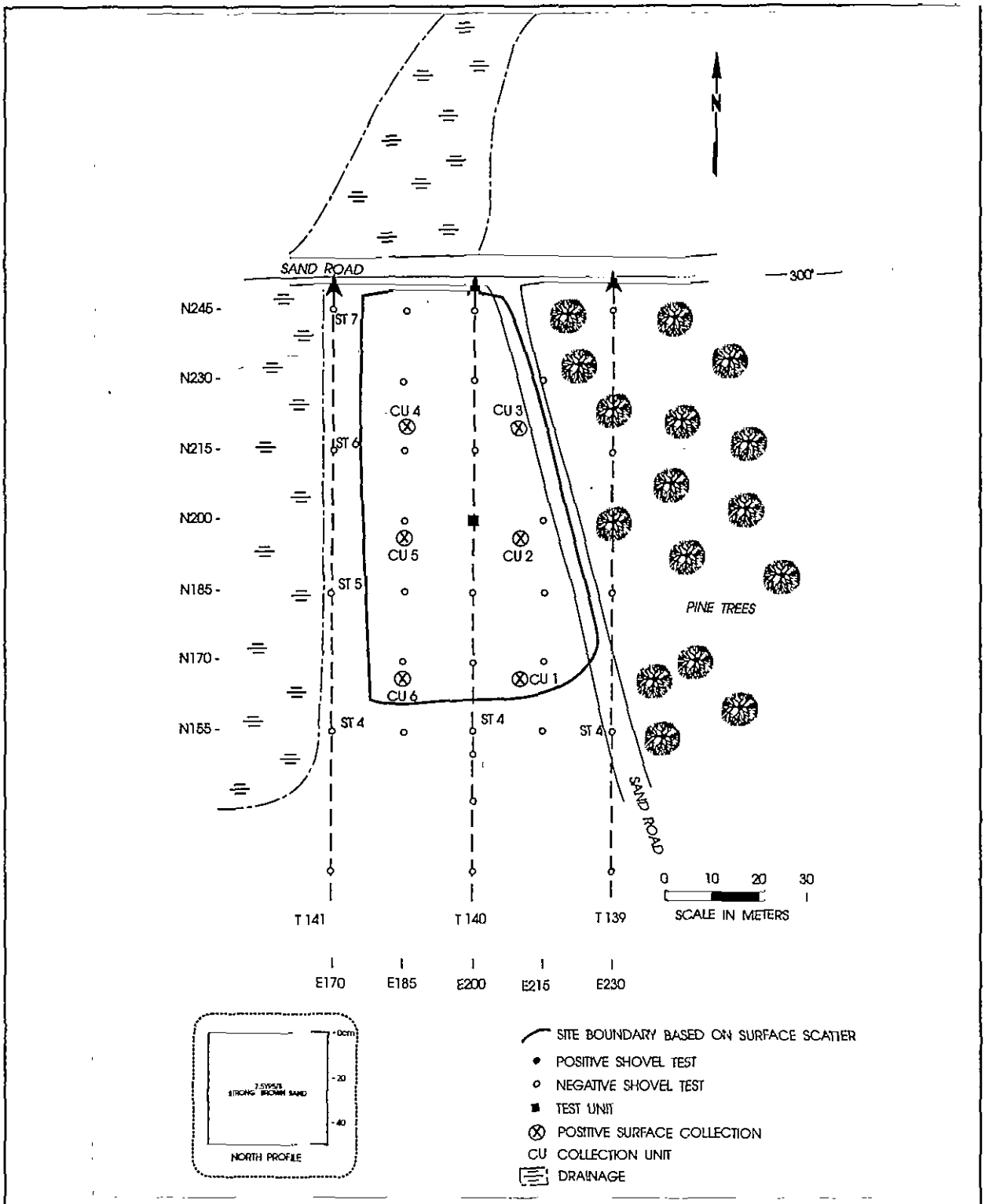


Figure 30. Map of 31SC75 and test unit profile.

measured 25.43 mm in width and 8.36 mm in thickness. The stem on this point, while shorter than often associated with the Morrow Mountain II point, is considerably longer than typical for the type I specimens. Coe (1964:Figure 34) illustrates similar variability, which is of course why many doubt the validity of this distinction.

A 50 cm test unit was centrally placed in an area which contained the highest concentration of artifacts. Excavated to a depth of 50 cm, no artifacts were recovered from this unit. The test unit soil profile consisted of 50 cm of strong brown (7.5YR5/8) sand (Figure 30). The soils are classified as Lakeland sand and the strong brown sands encountered in this unit are remnant C horizon soils, suggesting that the site has been severely deflated.

Using the northeast corner of the test unit as a base point designated N200E200, an additional 17 shovel tests were excavated in a cardinal grid pattern at 15 m intervals. No artifacts were recovered during close interval testing. All shovel tests were excavated to depths ranging from 50 to 75 cm below surface and all revealed soils lacking A or B horizon soils.

The site dates to the Middle Archaic Period as evidenced by the presence of the Morrow Mountain and Guilford projectile points. Although the site may have functioned as a lithic work station, the presence of small quantities of pottery indicates the possibility of seasonal occupation, perhaps focused on the nearby drainage. This is certainly the *type* of site which may be useful in obtaining further information on the settlement and subsistence models for Archaic sites in the Inner Coastal Plain and Sandhills of North Carolina.

Unfortunately, the testing suggests that this site is entirely deflated. No materials were recovered in either the shovel tests or the test unit. These subsurface investigations further reveal that the site lacks remnant A or B soil horizons. Materials appear to be situated on the surface of the site, where they were deposited as the upper soils were eroded, and are exposed today as the sands shift.

We are therefore recommending that the site is not eligible for inclusion on the National Register of Historic Places. If the military and the State Historic Preservation Office concur in this recommendation it precludes the necessity of further investigation. The Base Archaeologist, however, may wish to continue collecting this site using the previously established collection units for consistency. This additional information may provide additional information concerning the horizonal distribution of materials.

### 31SC87/31SC87**

Site 31SC87 is located 30 m west of US 15/501. It is bisected by the first east-west road of the Camp Mackall survey area along the north edge of Beaverdam Creek. The central UTM coordinates are N3875300 E641600. The site is situated on terrace with an intermittent drainage to west and Beaver Dam Creek, located approximately 30 m to the south. The elevation at the site is 92 m and, based on the initial pedestrian survey, the site measured about 70 m east-west by 60 m north-south. It encompassed about 2,100 $m^2$ (Figure 31).

The site was originally identified by Bev Boyko, Fort Bragg collections manager, who collected one quartz core, five quartz flakes, two metavolcanic flakes, several chert flakes, one rhyolite flake, one metavolcanic reworked Morrow Mountain projectile point, and one recently deposited turtle carapace fragment. No subsurface testing was done and further testing was recommended to assess the site's eligibility for inclusion on the National Register.

Vegetation at the site consists of heavy to moderate grass which provided poor surface visibility. Since there was less than 30 m between the road and the drainage to the south, the transects in this area were entirely pedestrian, with the bisecting road used for surface visibility (which in this area was excellent). To the north the first shovel tests of the transect work were begun 30 m from the road, or at the edge of what was eventually established as the site boundary. Regardless, no artifacts were found in either the shovel tests or in the road.

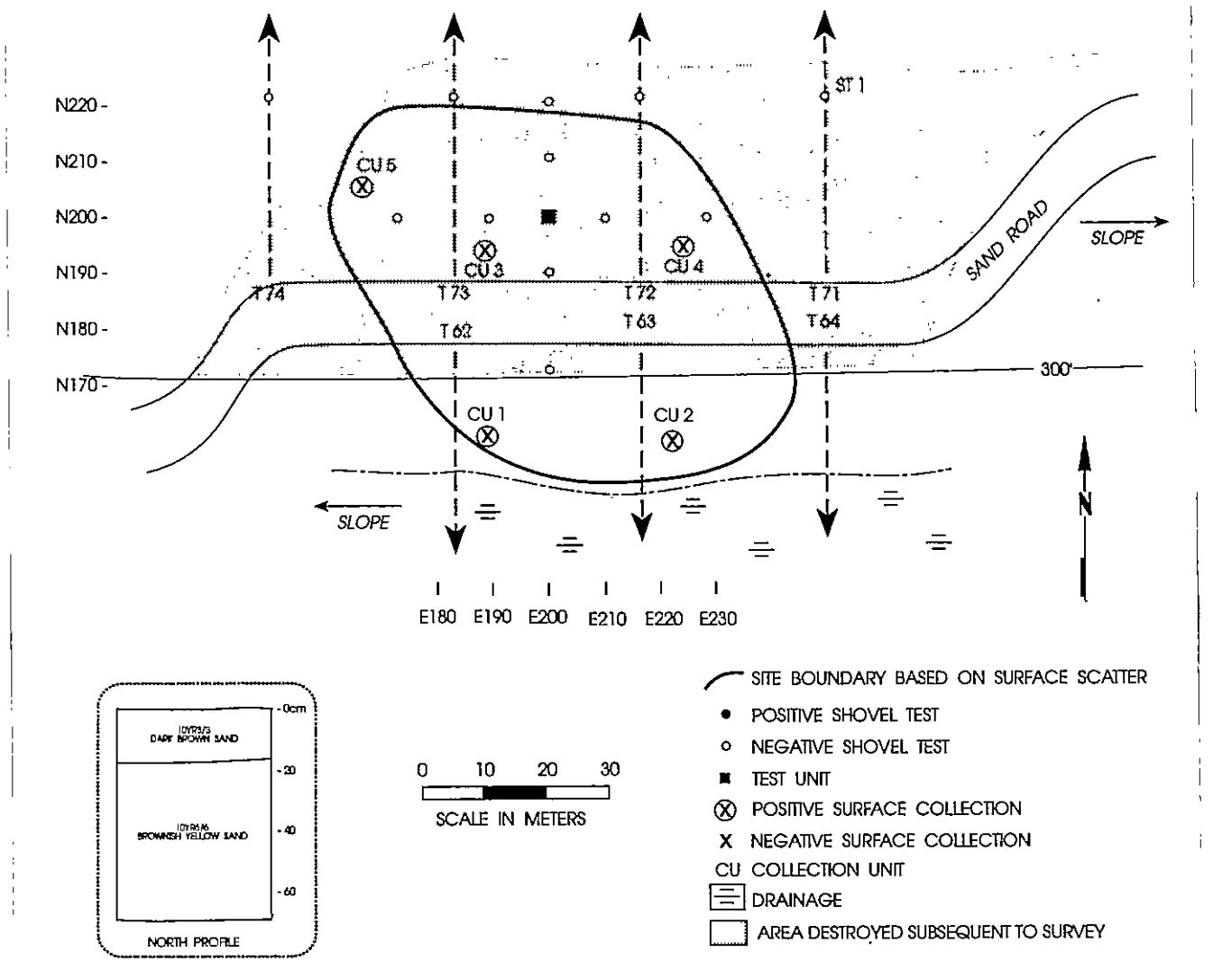


Figure 31. Map of 31SC87/31SC87** and test unit profile.

A controlled surface collection was made using a numerically designated 30 m grid. Artifacts were collected in the previously mentioned 70 m by 60 m area. The surface collection recovered 195 artifacts.

Collection Unit 1 contained 46 artifacts. These included one fragment of raw material, 18 secondary quartz flakes, and 27 secondary metavolcanic flakes. Collection Unit 2 contained a total of 50 artifacts. These included two primary quartz flakes, 19 secondary quartz flakes, and 29 secondary metavolcanic flakes. Collection Unit 3 contained 33 artifacts. These included 16 secondary quartz flakes, 16 secondary metavolcanic flakes, and one whiteware ceramic. Collection Unit 4 contained 34 artifacts, including 11 secondary quartz flakes, 21 secondary metavolcanic flakes, and two small sherds. Collection Unit 5 contained 32 artifacts. These included one fragment of raw material, one primary quartz flake, 14 secondary quartz flakes, and 16 secondary metavolcanic flakes.

A 50 cm test unit was centrally placed in Collection Unit 3, in the northern quadrant of the site (north of the east-west bisecting road). Excavated to a depth of 70 cm, one secondary quartz flake and six metavolcanic flakes were recovered at 30 cm to 40 cm and one metavolcanic flake was recovered from 40 cm to 50 cm below surface. The soil profile consisted of 15 cm of dark brown (10YR3/3) sand overlying 55 cm of brownish yellow (10YR6/6) sand (Figure 31). The soils are classified as Wagram loamy sand and this profile suggests the loss of at least some of the upper Ap horizon, leaving what appears to be the underlying B horizon soils.

Using the test unit as a base point, designated N200E200, an additional six shovel tests were excavated in a cardinal grid pattern at 10 and 15 m intervals. All shovel tests were excavated to depths ranging from 50 to 75 cm below surface and these confirmed remnant areas of A horizon laying conformably on B horizon soils. No artifacts, however, were recovered during the close interval testing.

During the initial survey it became clear that the site had been impacted by the road graded through the center of the site and by the initial clear cutting of the Green family property. The reduced Ap horizon suggested that the site was actively being eroded. Despite a large quantity of artifacts found on the surface, the site contains few subsurface remains. No diagnostic artifacts were recovered from the site and it may have functioned as a lithic work site. The single fragment of whiteware may reflect some type of historic occupation or use. Alternatively, it may reflect opportunistic discard of refuse, with the site reflecting secondary disposition.

This site was subsequently revisited and we discovered that a series of three sand roads had been graded (or perhaps created by tracked vehicles) through the northern 70% of the site. A brief examination revealed that this portion of the site had been effectively destroyed, with the soils thoroughly mixed.

It is unlikely, even in its initial condition, that 31SC87 could address significant research questions since it contained primarily surface lithic debitage. With the additional damage also considered it is clear that this site cannot be recommended eligible for inclusion on the National Register and we recommend no further management activities.

### 31SC88/31SC88**

Site 31SC88/31SC88** is located 300 m west of US 15/501 and is bordered to the north by the northernmost east-west road south of the Camp Mackall Drop Zone. To the south and west of the site are lowland swamps associated with Beaver Dam Creek. The central UTM coordinates are N3875040 E641400. The site is located on a gentle upland slope adjacent to an area that drops sharply to the south and west. The closest source of water is Beaver Dam Creek which flows approximately 40 m to the south. The elevation at the site is 92 m and the surface survey revealed the site to measure about 195 m east-west by as much as 135 m north-south (Figure 32). The total site size is approximately 21,600 m$^2$.

The site was originally recorded by Fort

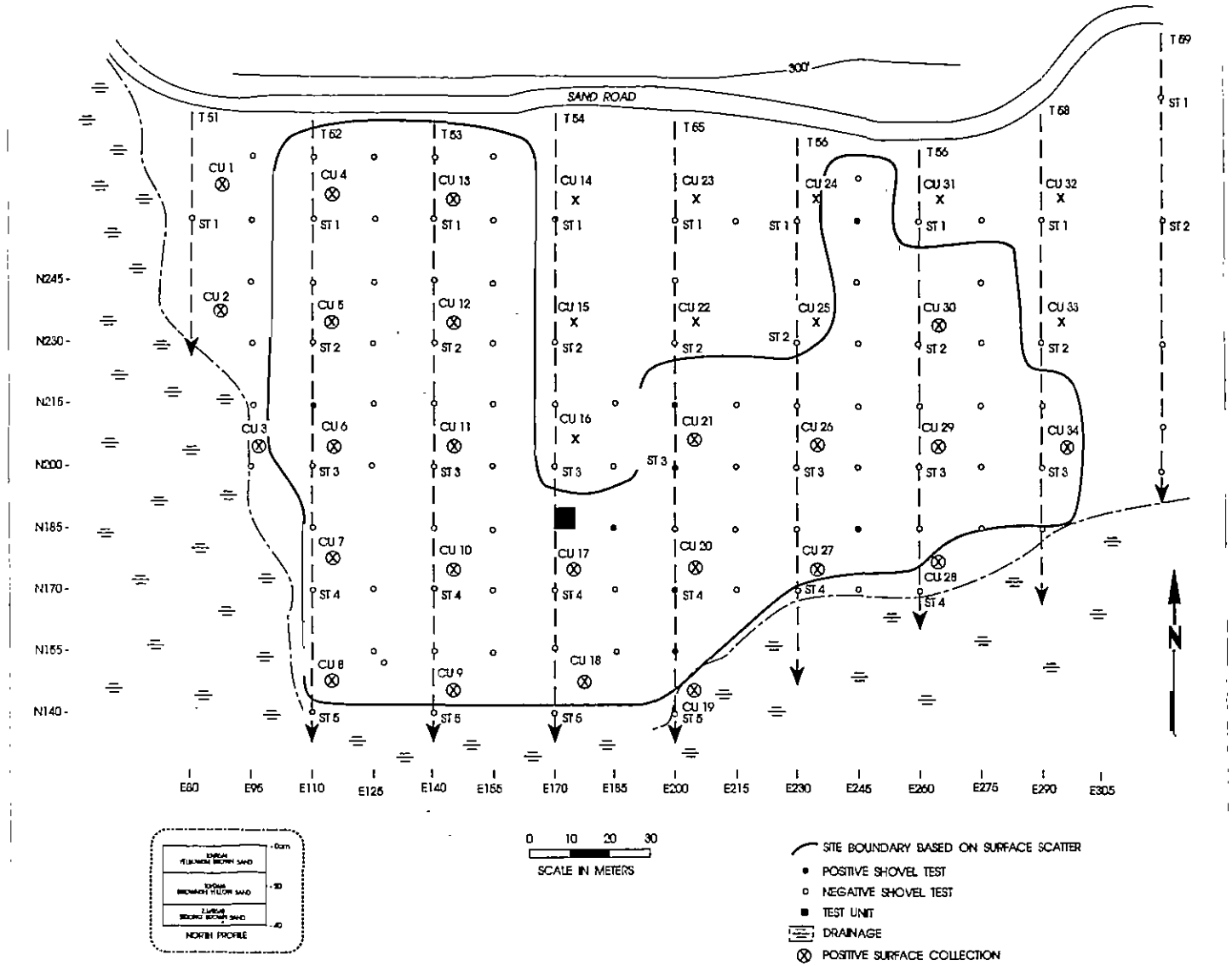


Figure 32. Map of 31SC88 and test unit profile.

Bragg collections manager Ms. Bev Boyko. Collected during her initial investigations were a small hammerstone, six quartz flakes, one quartz endscraper, one quartz biface fragment (reworked into a scraper), four metavolcanic flakes, two metavolcanic biface fragments, one distal portion of a metavolcanic projectile point, five rhyolite flakes, and three medium sand tempered prehistoric sherds. No subsurface testing was done and additional work was recommended at the site.

The vegetation at the site consisted of heavy grass coverage to the north and very sparse grass, which provided excellent surface visibility, to the south. Of the initial shovel tests on the transects two produced artifacts. On Transect 55, Shovel Test 3 yielded one quartz flake within the upper 30 cm, while Shovel Test 4 on that same transect produced two metavolcanic flakes within the upper 30 cm. The remaining 18 tests within, or immediately adjacent to, the surface scatter failed to produce any remains.

A controlled surface collection was made using a numerically designated 30 m grid. Artifacts were collected in a 240 m east-west by 150 m north-south area. The surface collection recovered 661 artifacts which are listed in Table 6.

The projectile points include an interesting array of Early Archaic through Late Woodland specimens, providing some indication for the occupation span at the site. The Hardaway Side Notched (Coe 1964:67) specimen is of metavolcanic material and measures 44.96 mm in length, 23.01 mm in width, and has a thickness of 7.55 mm (Figure 44 A). The Big Sandy base, also of metavolcanic material, measures 21.78 mm in width and has a thickness of 6.80 mm (Figure 44 B). These points are defined by Cambron and Hulse (1969:A-10) and while not common in North Carolina, are present in the Town Creek collection (Coe 1995:Figure 10.2d).

The Kirk Corner Notched (Coe 1964:69-70) metavolcanic base measures 23.44 mm in width and is 7.62 mm in thickness. The tip of the Morrow Mountain I (Coe 1964:37) specimen is missing, but the point is estimated to measure about 49.7 mm in length. The width is 23.27 mm and the thickness is 9.02 mm. This is also manufactured of metavolcanic rock. The metavolcanic Guilford Lanceolate (Coe 1964:43-44) consists only of a basal fragment (measuring 39.21 mm in length). While no estimate is possible for the overall length, the width is 22.76 mm and the thickness is 10.50 mm.

The metavolcanic point classified as a Gypsy Stemmed (Oliver 1981:154-156) measures 47.37 mm in length, with a blade length of 38.08 mm. The blade width is 22.09 mm and the stem width is 19.37 mm. The point is 10.39 mm thick (Figure 45 C). Although this point is slightly large for the Gypsy Stemmed classification this appears to be the best typological fit. The last point, a metavolcanic Caraway Triangular (Coe 1964:49) is missing it's tip and both ears are damaged. Consequently all measurements are approximate. The basal width is 19.2 mm, the length is 24.4 mm and the point is 3.78 mm thick (Figure 45 D).

The pottery recovered from the site is all classified as Yadkin. Most exhibit eroded surfaces, although both Yadkin Plain and Yadkin Cord Marked specimens could be identified.

A 50 cm test unit was centrally placed in an area which contained the highest concentration of artifacts. Excavated to a depth of 40 cm, one metavolcanic flake was recovered at 0 cm to 10 cm and another was recovered from 10 cm to 20 cm. The soil profile consisted of 15 cm of yellowish brown (10YR5/4) sandy loam over 15 cm of brownish yellow (10YR6/6) sand, overlying 10 cm of strong brown (7.5YR5/8) sand.

Using Transect 55 Shovel Test 3 as the N200E200 point, an additional 61 shovel tests were excavated in a cardinal grid pattern at 15 m intervals over the site. Of these, only six shovel tests (9.8%), produced additional materials—eight flakes. All of these tests were excavated to depths ranging from 50 to 75 cm, although the recovered artifacts were all found at 40 cm or above.

The soils at this site are Wagram loamy sands. Typically the Ap horizon of strong brown (10YR5/2) sand occurs at about 20 cm in depth and is followed by an A2 horizon of pale brown

(10YR6/3) loamy sand that extends to 60 cm below surface. The occurrence of brownish yellow (10YR6/6) sand at 15 to 30 cm, overlying a strong brown (7.5YR5/8) sand to 40 cm suggests a great deal of soil turbation probably associated with farming operations conducted by the Green family. As well, the occurrence of strong brown (10YR5/2) sand at shovel test pit N200E185 to 21 cm in depth and the lack of an A horizon at shovel test pit N185E215 would suggest significant erosion or deflation has occurred within the southern portion of the site.

Table 6.
Artifacts Recovered from Surface Collections at 31SC88/31SC88**

| | Flakes | | Projectile Points | | | | | | | | | | Pottery | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | Q | HSN | BS | KCN | MM | G | GS | C | Biface | HS | RM | Yadkin | Small | H | S |
| Collection Unit 1 | 8 | 6 | | | | | | | | | | | | | | |
| Collection Unit 2 | 1 | 2 | | | | | | | | | | | | 1 | | |
| Collection Unit 3 | | 2 | | | | | | | | | | | | | | |
| Collection Unit 4 | 1 | 4 | | | | | | | | | | | | | | |
| Collection Unit 5 | 19 | 12 | | | | 1 | | | | | | 1 | | | | |
| Collection Unit 6 | 22 | 11 | | | | | | | | | | | | | | |
| Collection Unit 7 | 2 | 3 | | | | | | | | | | | 1 | | | |
| Collection Unit 8 | 1 | | | | | | | | | | | | | | | |
| Collection Unit 9 | 66 | 39 | | | | | | | | | | | 1 | 2 | 2 | |
| Collection Unit 10 | 8 | 5 | 1 | 1 | | | 1 | | | | | | | | | |
| Collection Unit 11 | 3 | 1 | | | | | | | | 1 | | | | 6 | | |
| Collection Unit 12 | 2 | 1 | | | 1 | | | | | | | | | 2 | | |
| Collection Unit 13 | 1 | 1 | | | | | | | | | | | | | | |
| Collection Unit 17 | 50 | 20 | | | | | | | 1 | 5 | | | | 1 | | 54 |
| Collection Unit 18 | 38 | 14 | | | | | | | | | | | | | 1 | 4 |
| Collection Unit 19 | 37 | 18 | | | | | | | | | 1 | 4 | | | 1 | |
| Collection Unit 20 | 6 | 8 | | | | | | | | 1 | | | | | 1 | |
| Collection Unit 21 | | 1 | | | | | | | | | | | | | 3 | |
| Collection Unit 26 | | | | | | | | | | | | | 1 | | | |
| Collection Unit 27 | 80 | 19 | | | 1 | | | | | | | 4 | 1 | | | |
| Collection Unit 28 | | 2 | | | | | | | | | | | | | | |
| Collection Unit 29 | 2 | 1 | | | | | | | | | | | | | | |
| Collection Unit 30 | 4 | 4 | | | | | | | | | | | | 1 | 1 | |
| Collection Unit 34 | 24 | 3 | | | | | | | | | | 1 | | | | |

M = metavolcanic, Q = quartz, HSN = Hardaway Side Notched, BS = Big Sandy, KCN = Kirk Corner Notched, MM = Morrow Mountain, G = Guilford, GS = Gypsy Stemmed, C = Caraway Triangular, HS = hammerstone, RM = raw materials (cracked rock), Small = small sherds, H = historic artifacts, S = shell fragments (counted)

It is unknown, at this time, whether erosional factors along with highly turbated soils have been extensive enough to destroy any subsurface features or deposits which may exist. Deflation is a continuing problem in the project area (Figure 11 was taken in this general area) and is evident through the re-occurrence of surface collections on a weekly basis, dependent upon the amount of wind and rain. Initial damage to the site was probably caused by clear cutting and deep plowing. Although problems exist with the stratigraphic profile of the site, and the current testing has produced a relatively low percentage of remains, the extensive spatial distribution and temporal range (Early Archaic to Late Woodland) would suggest the possibility of seasonal or long term occupation. This would suggest the possible presence of subsurface features. As a result, 31SC88 is recommended as potentially eligible for inclusion on the National Register of Historic Places.

We recommend close interval testing using 50 cm units, combined with the excavation of several 1 to 2 meter units in the densest portions of the site. This should provide adequate information on the potential for subsurface features, as well as the presence of still intact subsurface remains.

## Newly Identified Archaeological Sites

### 31SC91

Site 31SC91 is located 1,860 m west of US 15/501, 240 m west of the western survey boundary road, and 350 m south of the southernmost east-west runway of the Camp Mackall Drop Zone survey tract. It also situated south of the northernmost east-west road running through the tract south of the drop zone. The central UTM

coordinates are N3874800 E639930.

Topography in the site area slopes steeply (about 30°) to an intermittent drainage of Beaverdam Creek on the eastern and southeastern edges of the site. Elsewhere the topography is relatively level, at an elevation of about 92 m. The closest permanent source of water is Beaver Dam Creek located 850 m to the south. The site is estimated to measure about 12 m east-west by 20 m north-south based on the shovel testing program. The site encompasses about 200 m² (Figure 33).

Vegetation at the site consists of mixed pine and hardwoods with sparse undergrowth. No surface artifacts were observed or collected from the site. The site was initially encountered by the recovery of two metavolcanic flakes in shovel testing the transect lines (T6 ST2, also designated N200E200).

An additional 13 shovel tests were excavated in cardinal directions from the original positive shovel test at 10 m intervals. Only one of these (N210E200) was positive, producing 22 metavolcanic flakes, all within 20 cm of the surface. All of the shovel tests were excavated to a depth of 50 cm or greater.

A 50 cm test unit was placed at the site between the two positive shovel test pits and excavated to a depth of 80 cm below surface. Five secondary metavolcanic flakes were recovered from the 40 cm to 50 cm level and ten secondary metavolcanic flakes were recovered from the 50 cm to 60 cm level. The site produced a total of 39 artifacts.

The soil profile in the 50 cm unit consisted of 25 cm of very dark grayish brown (10YR3/2) sand overlying 55 cm of brownish yellow (10YR6/6) fine sand (Figure 33). The soils at the site are classified as Lakeland sands. According to the county soil survey (Horton 1967:13) soils of this color in this series are typically found at these depths. This indicates that the site has not experienced a great deal of erosion, but may actually show an increase in deposition.

Although the site appears to be in relatively good condition, the absence of diagnostic materials, the steep nearby slope, and the sparse distribution of materials suggests that the site is not able to address significant research questions posed for the area. Consequently, we recommend the site not eligible for inclusion on the National Register. No further management actions appear warranted.

### 31SC92

Site 31SC92 is located 1,200 m west of US 15/501, 840 m west of the western survey boundary road, and 460 m south of the southernmost east-west runway of the Camp Mackall Drop Zone survey tract. It also borders to the south of the northernmost east-west road running through the tract south of the drop zone. The central UTM coordinates are N3874750 E640540.

The topography of site area is generally level, although there is a steep 20° slope to the south, toward Beaver Dam Creek, about 350 m distant. A more gradual slope to the west leads to an intermittent drainage of Beaver Dam Creek. The elevation of the site is about 92 m. Based on the shovel testing program outlined below, the site measures about 10 m east-west by about 35 m north-south. The site is estimated to cover about 350 m² (Figure 34).

Vegetation at the site consists of mixed pine and hardwoods with a moderate amount of small scrub oak. Surface visibility was poor throughout the site area and no surface collection was made. The site was initially discovered through the recovery of a single metavolcanic flake in T28 ST 1 at a depth of 30 cm. A second positive test was encountered in T28 ST2, where two metavolcanic flakes were recovered at 20 cm.

Fourteen additional shovel tests were excavated in cardinal directions from the original two positive shovel tests at 10 m intervals. All of these shovel tests were excavated to a depth of 50 cm or greater. None of these additional tests, however, produced any cultural materials.

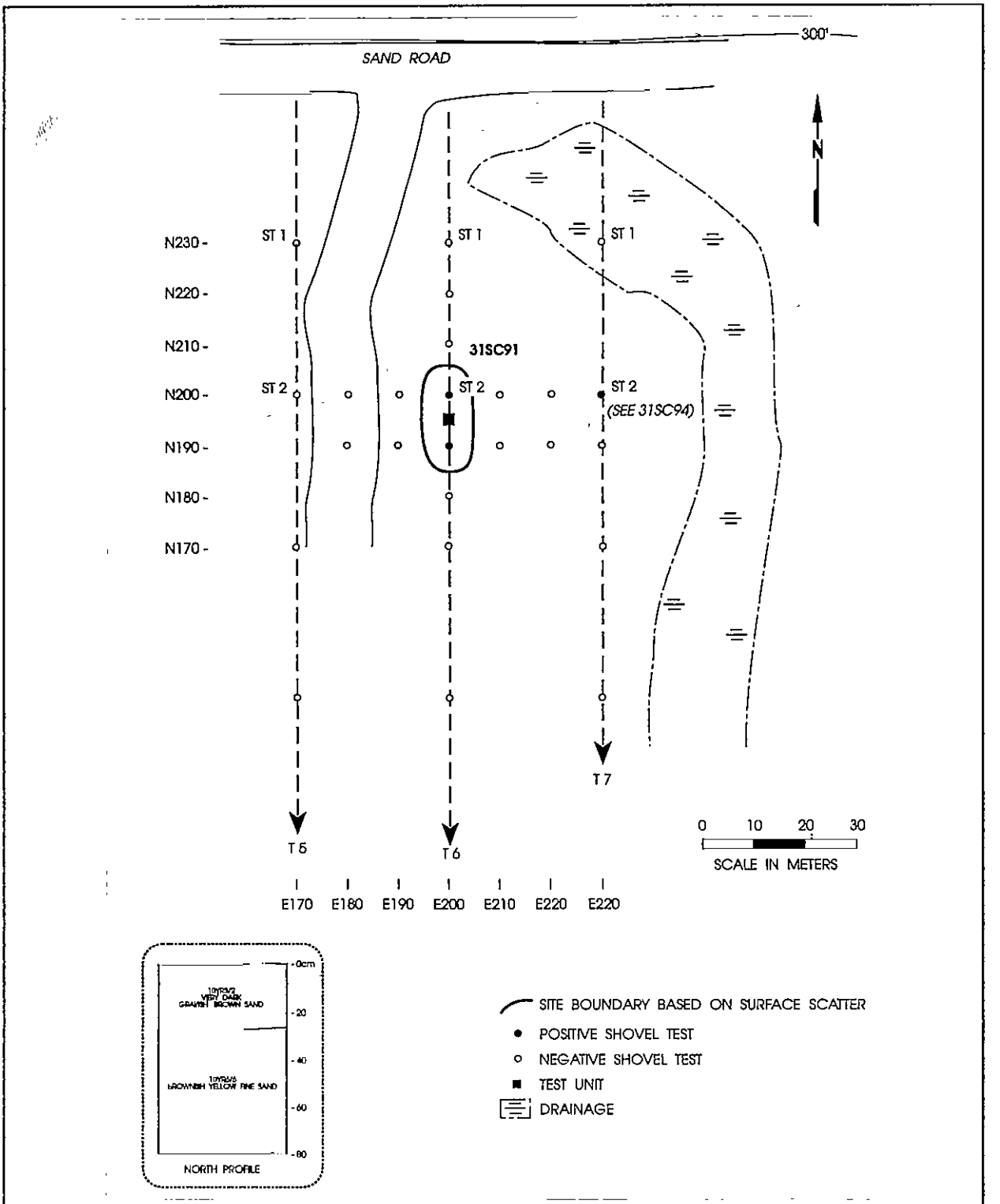


Figure 33. Map of 31SC91 and test unit profile.

A 50 cm square test unit was placed at the site between the two positive shovel test pits and excavated to a depth of 40 cm below surface — again no artifacts were recovered. Consequently, the site produced only three artifacts.

The soil profile in the 50 cm unit consisted of 10 cm of very dark grayish brown (10YR3/2) sand overlying a red (7.5YR5/6) fine sand (Figure 34). The soils at the site are classified as Lakeland sands. According to the county soil survey (Horton 1967:13) the A horizon in this series extends to a depth of 15 cm. This indicates that the site has experienced a slight amount of erosion.

The absence of diagnostic remains, the potential for erosion to have affected the site, the sparse amount of material recovered, and the absence of a clearly defined occupation level, all suggest that the site lacks integrity. It is unlikely that the site can address significant research questions concerning prehistoric occupation or lifeways. As a result, 31SC92 is recommended as not eligible for inclusion on the National Register of Historic Places.

### 31SC93

Site 31SC93 is located 1,740 m west of US 15/501 in the Camp Mackall Drop Zone survey tract. It is 820 m south of the southernmost runway at the drop zone and 90 m to the north of the southernmost east-west road running through the tract south of the drop zone. The central UTM coordinates are N3874330 E640030. The site is located on a hilltop which slopes down in all cardinal directions. The closest source of permanent water is Beaver Dam Creek located approximately 250 m to the south. The elevation at the site is 92 m. Based on the observed scatter of material at the site, it is estimated to measure about 10 m in diameter, covering an area of about 80 $m^2$ (Figure 35).

Vegetation at the site consists of mixed pine and hardwoods with a scrub oak understory making surface visibility generally poor. In spite of that, the pedestrian survey through this area identified a scatter of eight secondary metavolcanic flakes from the back dirt of a foxhole on Transect 9, just south of Shovel Test 16. Both ST 16 and ST 17 on this transect were negative.

Six additional shovel tests were excavated in cardinal directions around this discovery at 10 m intervals. All tests were excavated to a depth of 40 cm to 60 cm, slightly deeper than the associated foxhole, with none producing subsurface remains.

A 50 cm square unit was placed five meters north of the surface find and excavated to a depth of 80 cm below surface. A total of 16 secondary metavolcanic flakes were recovered; 12 at the 20 cm to 30 cm level, two at the 30 cm to 40 cm level, and two from the 40 cm to 50 cm level. This suggests that the site was largely contained in the upper 30 cm. The soil profile of the test unit consisted of 15 cm of grayish brown sand (10YR5/2) overlying 58 cm of brownish yellow (10YR6/8) sand, which overlay a strong brown (7.5YR5/8) sand which occurs at 75 cm (Figure 35).

The soils at the site are classified as Lakeland sands and typically the strong brown sands are found at a depth of 15 cm or greater (Horton 1967:13). This suggests that the site has suffered a great deal of turbation, possibly from military operations in the area.

No diagnostic artifacts were recovered from the site to provide information on temporal placement. Although subsurface remains were recovered, soil profiles indicate that the site has been heavily disturbed. Site 31SC93 is recommended as not eligible for inclusion on the National Register of Historic Places.

### 31SC94

Site 31SC94 is located about 1,770 m west of US 15/501 and 420 m south of the southernmost east-west runway of the Camp Mackall Drop Zone survey tract. It is also 90 m south of the southernmost base road. The central UTM coordinates are N3874750 E640960. The site is situated on a slight sandy knoll which slopes to the northeast, east, and south into an intermittent drainage. The site is also situated about 30 m east

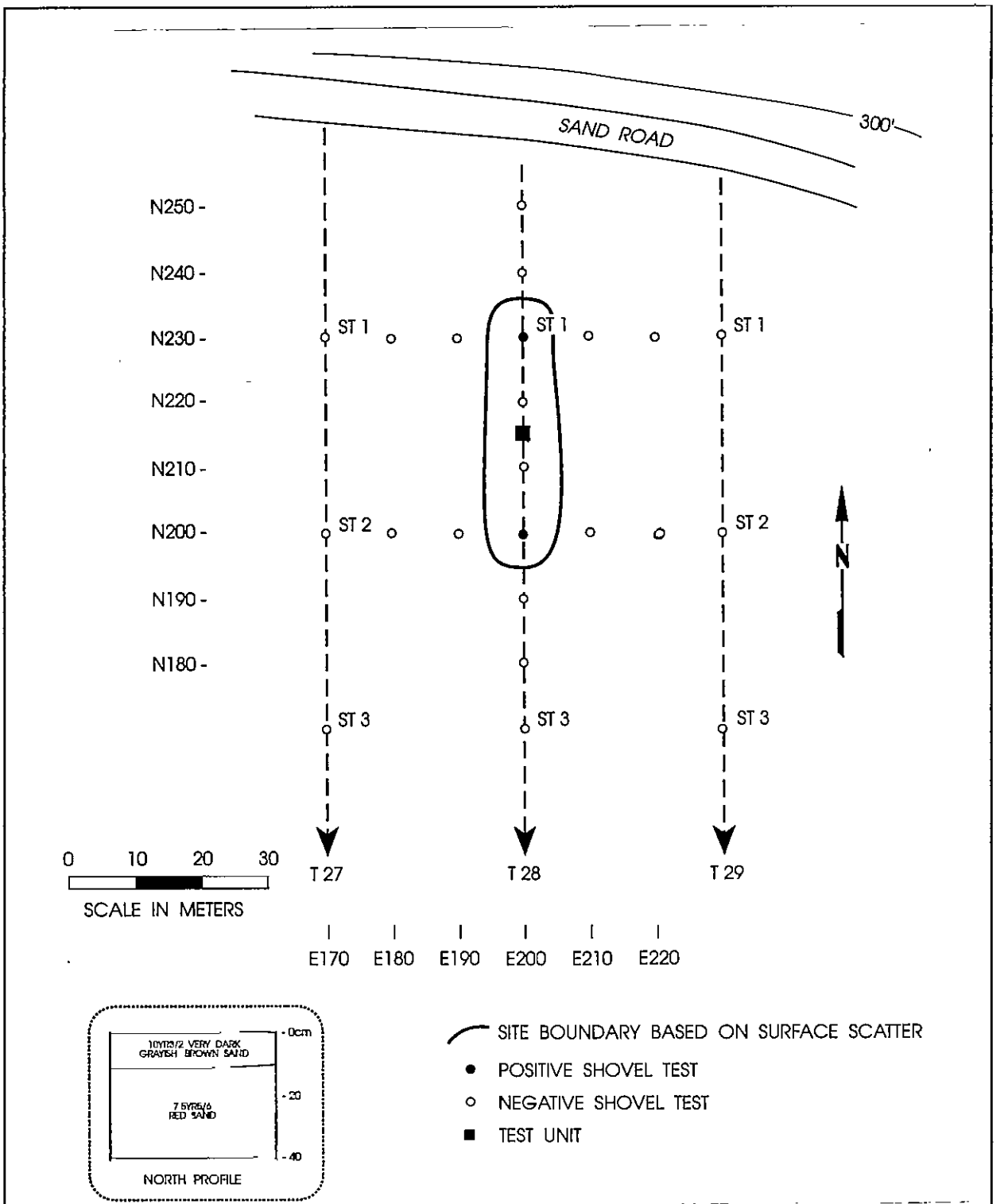


Figure 34. Map of 31SC92 and test unit profile.

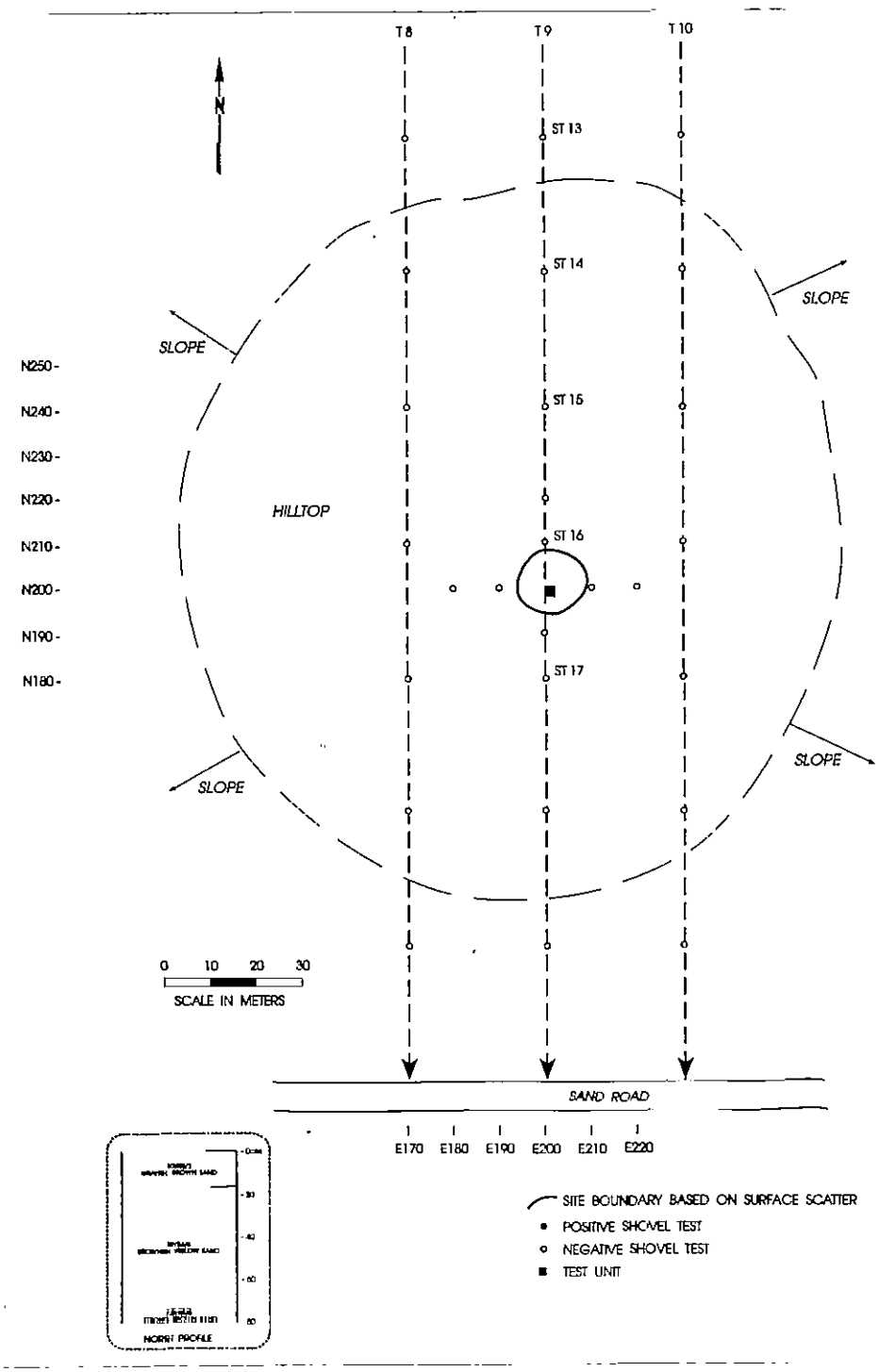


Figure 35. Map of 31SC93 and test unit profile.

of 31SC91.

The nearest source of water is Beaver Dam Creek which flows approximately 725 m to the south. The elevation at the site is 92 m and based on the shovel testing, the site measures about 10 m in diameter, encompassing about 80 m² (Figure 36). Eighteen artifacts, all flakes, were recovered from the investigations.

The site area is primarily hardwoods with an understory of scrub oak. No artifacts were found or collected from the surface, although 18 flakes (five metavolcanic and 13 quartz) were recovered from Transect 7 Shovel Test 2 at a depth of about 25 cm. Eight additional shovel tests were excavated in cardinal directions at 10 m intervals from the initial positive shovel test. All extended from 40 cm to 70 cm below surface. None, however, yielded any artifacts.

A 50 cm square unit was also placed at the site, just to the northeast of the positive shovel test, and excavated to a depth of 70 cm below surface. No artifacts were encountered. The soil profile of the test unit consisted of 15 cm of yellowish brown (10YR5/6) sand over 10 cm of yellow (10YR7/6) sand. This in turn overlaid 45 cm of light yellowish brown (10YR6/4) sand (Figure 36). These soils are classified as Lakeland sands and the lower 45 cm of the profile reflects C horizon soils typical of Lakeland sands. The upper 25 cm, however, suggest possible redeposition of soils. It is possible that soils are washing to the area of 31SC94 from further upslope (west).

Readers will recall that about 30 meters to the west of this site, 31SC91 was encountered. Site 31SC91 may be the origin for the materials encountered at 31SC94, but this could not be determined with any certainty by this survey. We do know that the shovel tests between the two sites are all negative. It was, in other words, impossible to combine these two small sites into one larger site for administrative purposes.

No diagnostic artifacts were recovered from 31SC94 and the lone presence of debitage suggests that site activities were limited. As just discussed, soils at the site suggest that it may have been washed down from upslope and are out of their original context. Site 31SC94 is unlikely to be able to address significant research questions and is recommended as not eligible for inclusion on the National Register of Historic Places.

### 31SC95

Site 31SC95 is located 1,500 m west of US 15/501 and 320 m south of the southernmost east-west runway of the Camp Mackall Drop Zone survey area. It also borders the northern edge of the northernmost east-west road south of the main drop zone. The central UTM coordinates are N3874880 E640700. The site is located on an upland slope and the nearest source of water is an intermittent drainage of Beaver Dam Creek located 300 m to the south.

The elevation at the site is 92 m and the topography in the site area is rolling, falling to the south, toward the drainage. At the southern edge of the site is a sand road. The transect shovel testing failed to identify any remains and the site was encountered in the pedestrian survey. Based on the surface collections the site measures about 55 m east-west and 20 m north-south. It encompasses an area of about 700 m² (Figure 37).

Vegetation at the site consists of very sparse and spotty grass, revealing that the area of the site is badly eroded with occasional 0.3 to 0.5 m gullies. Visibility was excellent and a controlled surface collection was made using a numerically designated 30 m grid. Artifacts were collected from a 120 m east-west by 30 m north-south area. The surface collection recovered 201 artifacts.

Collection Unit 1 contained a total of 14 artifacts, including one secondary quartz flake and 13 secondary metavolcanic flakes. Collection Unit 2 contained a total of 168 artifacts. These included three secondary quartz flakes and 165 secondary metavolcanic flakes. Collection Unit 3 contained 19 secondary metavolcanic flakes. Collection Unit 4, originally thought to be on the edge of the site, was found to contain no artifacts.

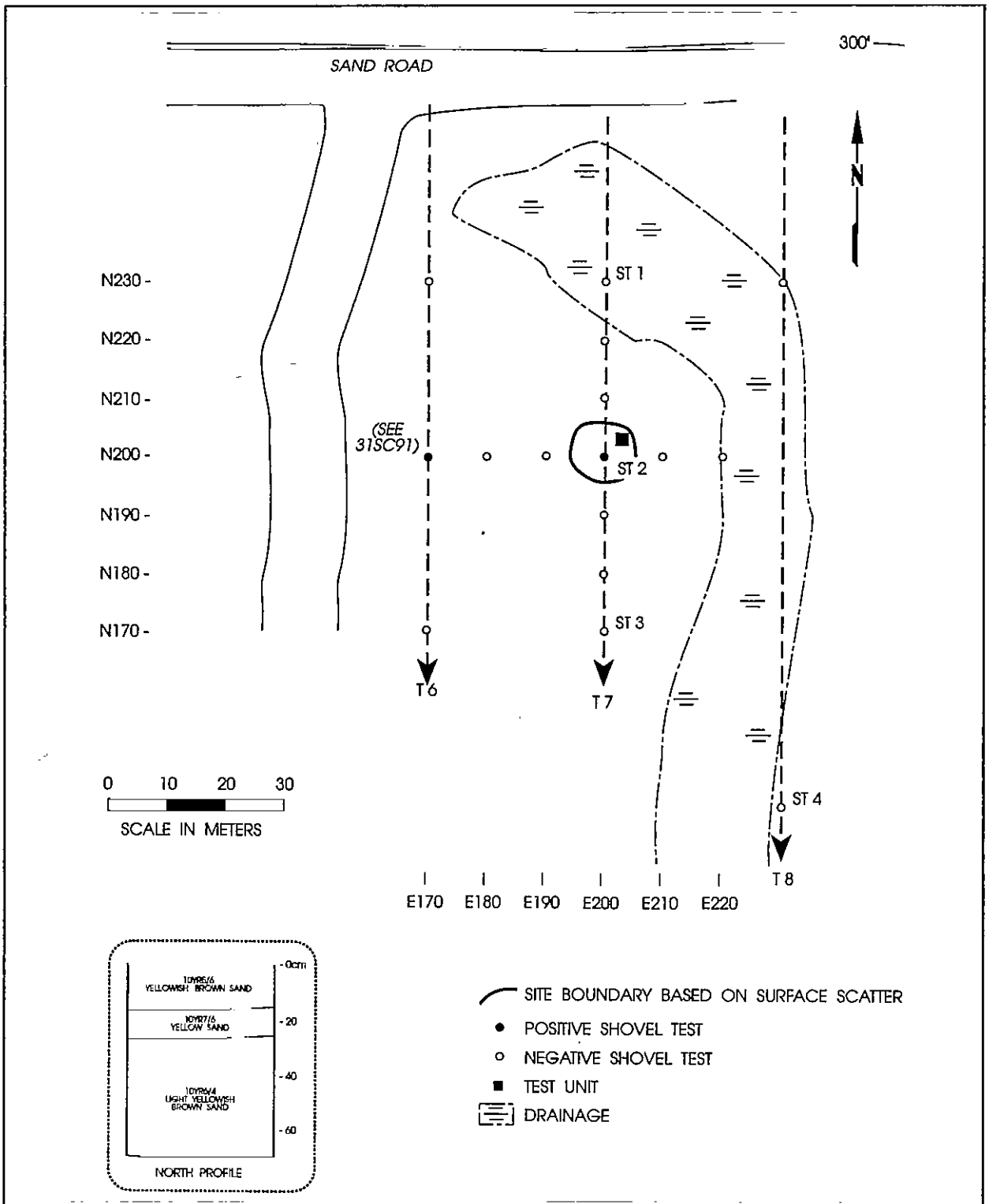


Figure 36. Map of 31SC94 and test unit profile.

A 50 cm test unit was centrally placed in the area which contained the highest density of surface material — Collection Unit 2. In spite of the density of artifacts in the 30 m collection grid (about one specimen per 5 m²), no artifacts were recovered in the test unit.

The test unit soil profile consisted of 60 cm of strong brown (7.5YR5/8) sand (Figure 37). The soils are classified as Lakeland sand. While the C horizon of Lakeland soils are typically yellowish-brown (10YR6/4 to 10YR5/6), this profile is consistent with entirely deflated soils.

Using the northeast corner of the test unit as the N200E200 point, an additional eight shovel tests were excavated in a cardinal grid pattern at 15 m and 10 m intervals. All shovel tests were excavated to depths ranging from 50 to 75 cm below surface. No artifacts were recovered during close interval testing.

No temporal range is evident from the artifact collection and the site possibly functioned as a limited activity site since it contained only lithics. Site 31SC95 is badly eroded and contained no subsurface remains. It is unlikely that the site can address significant research questions. As a result, site 31SC95 is recommended as not eligible for inclusion on the National Register of Historic Places.

### 31SC96/31SC96**

Site 31SC96 is located 1,440 m west of US 15/501 and 310 m south of the southernmost east-west runway of the Camp Mackall Drop Zone survey area. It also borders on the northernmost east-west road. The central UTM coordinates are N3874850 E640310. The site is situated on a heavily eroded ridge which slopes 50 m to the east to an intermittent drainage The nearest source of permanent water is Beaver Dam Creek located 500 m to the south. The elevation at the site is 92 m. The surface survey revealed the site to be a long, linear scatter of material, measuring only 30 m east-west, but extending for 200 m north-south.

Table 7.
Artifacts Recovered from Surface Collection Units at 31SC96/31SC96**

| | Collection Units | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 11 | 12 | 13 | 14 |
| Flakes | | | | | | | | | | | |
| metavolcanic | 9 | 1 | 2 | 4 | 13 | 7 | 1 | | 13 | 10 | |
| quartz | 2 | | 1 | 1 | 3 | | | 1 | 1 | 2 | |
| Pottery | | | | | | | | | | | |
| Yadkin Plain | | | | | | 1 | | | | | |
| small sherds | | | 3 | | 1 | 6 | | | | | 1 |
| Hist. ceramics | | | | | | | | | | | |
| stoneware | | | | | | | | | | 2 | |
| Animal bone | | | | | | 1 | | | | | |

The site, therefore, encompasses nearly 4,500 m² (Figure 38).

The initial shovel tests conducted on Transects 19 (to the south) and 116 (to the north) failed to reveal this site. The associated pedestrian survey, however, identified the scatter along these transects. It was not found extending to the adjacent transects.

Vegetation at the site consists of sparse grass providing approximately 75% visibility. A controlled surface collection was made using a numerically designated 30 m grid. These remains were collected in a 60 m east-west by 200 m north-south area. The surface collection recovered 86 artifacts, revealing a relatively low density of one artifact every 52 m². The results of this collection are shown in Table 7.

A 50 cm test unit was placed in Collection Unit 3, which exhibited relatively high artifact density and which was also centrally located in the site area. This test pit was excavated to a depth of 50 cm, although no artifacts were recovered. The soil profile in the unit consisted of 15 cm of brown (10YR5/3) sand over 36 cm of brownish yellow (10YR6/8) sand, which is characteristic of the C horizon soils in this portion of the survey area (Figure 38).

Using the southeast corner of the test unit as the control point N200E200, an additional 24 shovel tests were excavated in a cardinal grid pattern at 15 m intervals. These shovel tests were

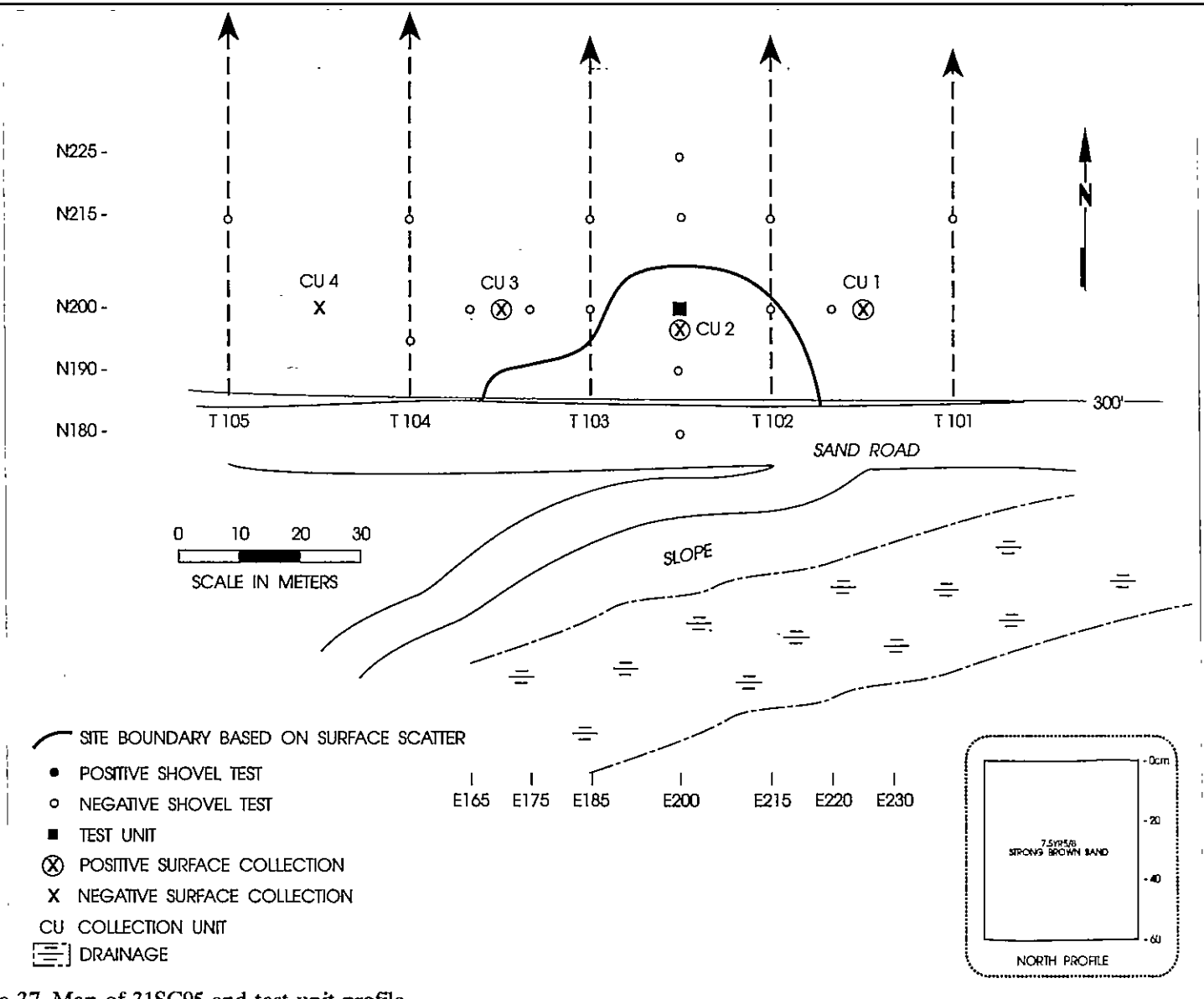


Figure 37. Map of 31SC95 and test unit profile.

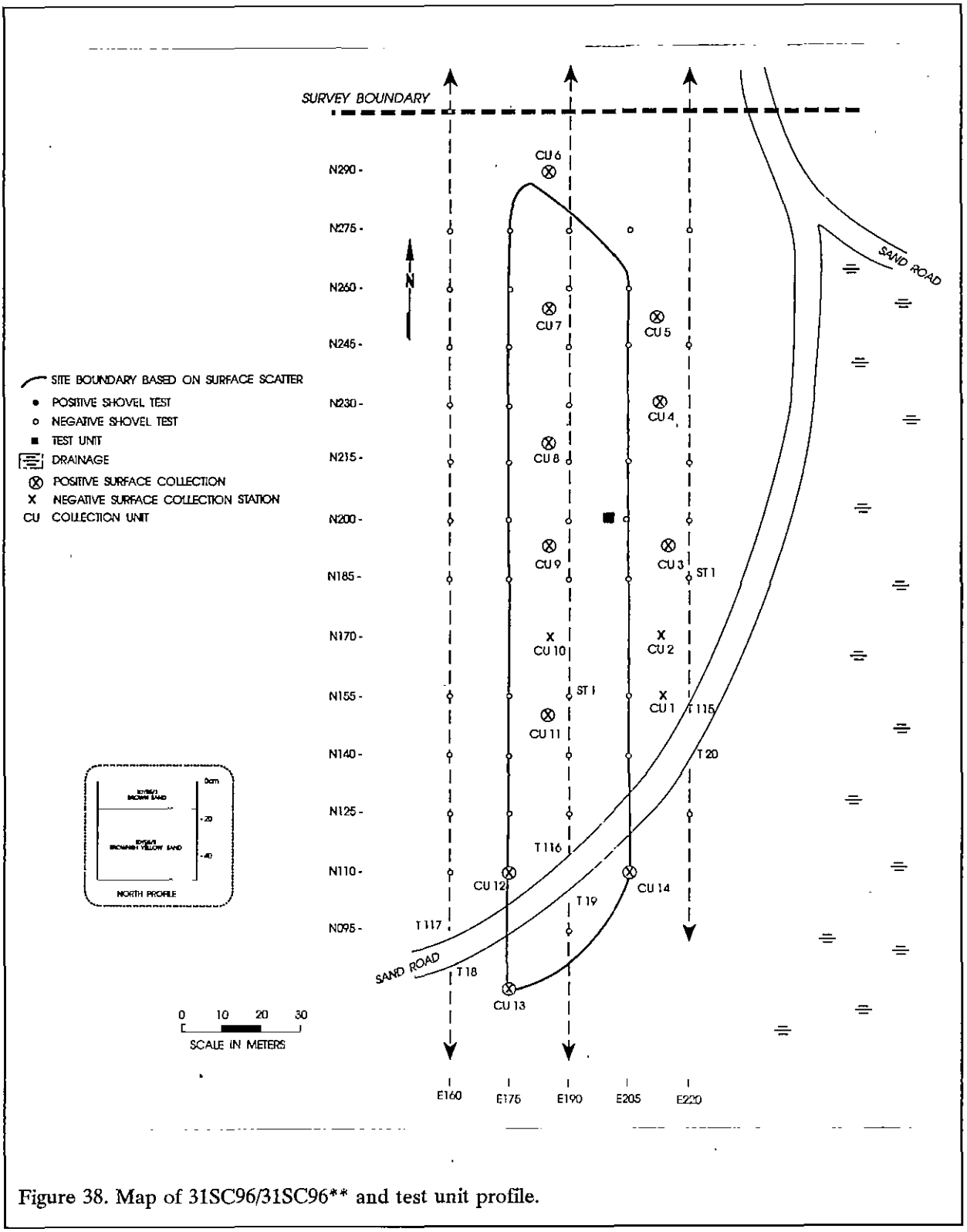


Figure 38. Map of 31SC96/31SC96** and test unit profile.

excavated from 50 to as deep as 75 cm. While these tests confirmed the soil profile of the central unit, no artifacts were recovered.

The soils of site 31SC96/31SC96** are classified as Lakeland sands and, as previously mentioned, strong brown sands are typically encountered at 37 or more cm below surface, in the C2 horizon (Hudson 1984:82). This indicates that the site is badly eroded. This has probably been caused by clear cutting, although road construction on the southeastern slope side of the site may have contributed. No subsurface remains were recovered in shovel testing or from the test unit. As well, data sets are limited to lithic artifacts. It is therefore unlikely that the site can address significant research questions. Site 31SC96/31SC96** is recommended as not eligible for inclusion on the National Register of Historic Places.

### 31SC97

Site 31SC97 is located 1,620 m west of US 15/501 and 350 m south of the southernmost east-west runway of the Camp Mackall Drop Zone survey area. It is also bordered to the south by the northernmost east-west road. The central UTM coordinates are N3874750 E640120. The site is situated on a heavily eroded ridge sloping southward to a small, intermittent drainage, about 70 m distant. The nearest source of water is Beaver Dam Creek located 625 m to the south. The elevation at the site is 92 m. The surface collection suggests the site measures about 35 m east-west by 35 m north-south. It encompasses an area of 900 $m^2$ (Figure 39).

Vegetation at the site consists of sparse grass providing approximately 75% visibility. The initial shovel test survey along Transects 122 and 123 failed to identify any subsurface remains, although the pedestrian investigations revealed the scatter.

A controlled surface collection was made using a numerically designated 30 m grid. Artifacts were collected in a 90 m east-west by 60 m north-south area. This collection produced 52 artifacts.

Collection Unit 1 contained two secondary metavolcanic flakes. Collection Unit 2 contained four secondary metavolcanic flakes. Collection Unit 3 contained 33 secondary metavolcanic flakes. Collection Unit 4 contained seven secondary metavolcanic flakes. Collection Unit 6 contained six secondary metavolcanic flakes.

A 50 cm test unit was centrally placed in the center of Collection Unit 3, which produced the largest quantity of artifacts (although even here the density was relatively low — only one artifact per 27 $m^2$). This test was excavated to a depth of 100 cm, revealing a complex profile, but completely devoid of artifacts.

The test unit soil profile consisted of 14 cm of yellowish brown (10YR5/6) sand over strong brown (7.5YR5/8) sand to a depth of about 65 cm. An intrusive layer of brownish yellow (10YR6/8) sand was found at 35 cm and 42 cm. From 65 cm to 75 cm a dark brown (10YR3/3) sand was encountered which overlay 25 cm of strong brown (7.5YR5/8) sand.

Designating the southeast corner of the test unit as N200E200, an additional 16 shovel tests were excavated in a cardinal grid pattern at 10 to 15 m intervals. All shovel tests were excavated to depths ranging from 50 to 75 cm below surface. Only one shovel test unit (N210E200) yielded artifacts, five metavolcanic flakes at a depth of 40 cm. No other artifacts were recovered during close interval testing.

The soils are classified as Lakeland sands and strong brown sands are typically encountered at 37 or more cm below surface (Hudson 1984). The convoluted nature of the test unit profile would indicate that the site has been heavily impacted, most likely from military operations and landscape modification during training exercises.

No diagnostic artifacts were encountered and the site was probably used as a lithic work station. Other than one positive shovel test no subsurface remains were recovered, and the data sets are limited to lithic artifacts. It is unlikely that the site can address significant research questions. As a result, 31SC97 is recommended as not eligible

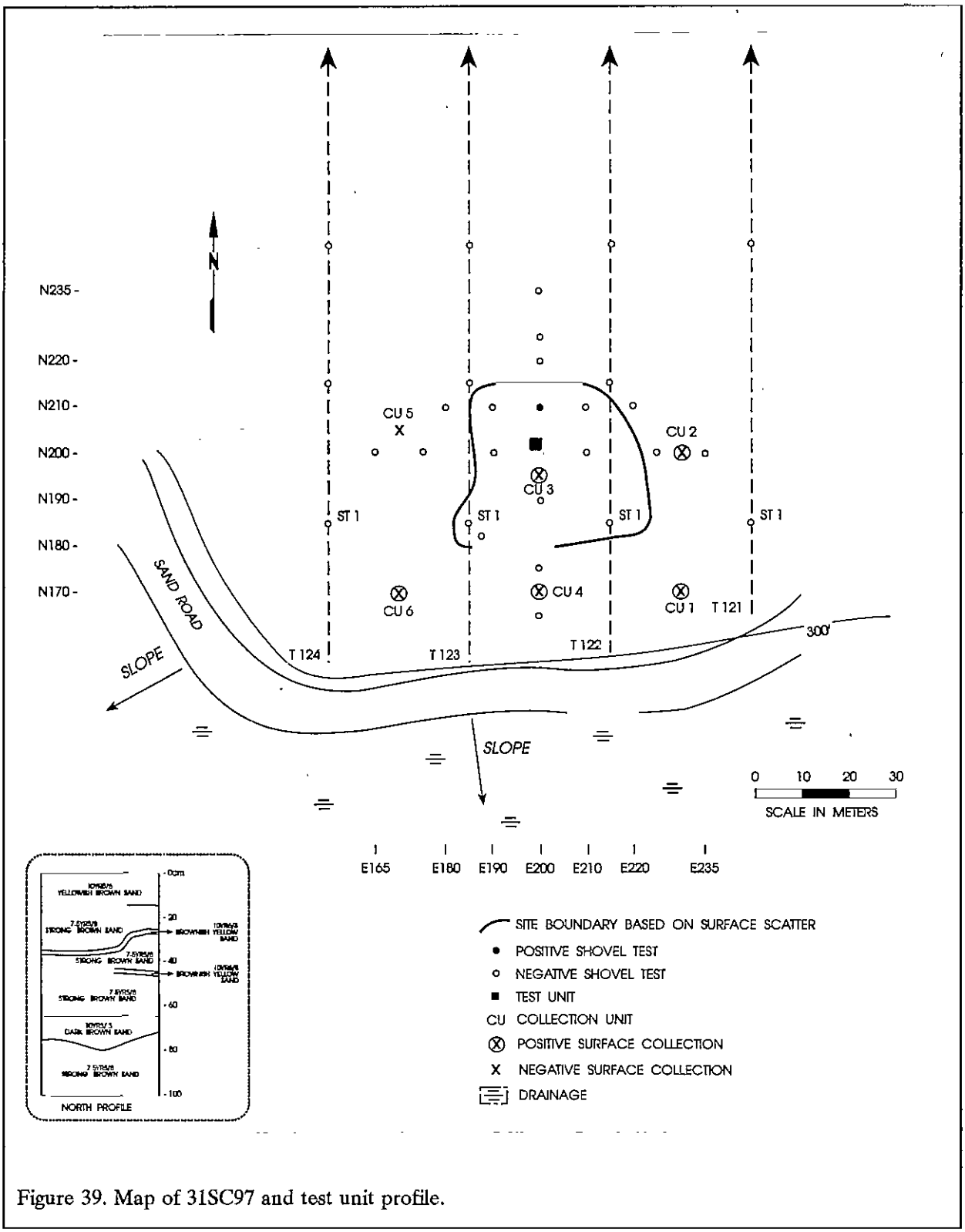


Figure 39. Map of 31SC97 and test unit profile.

for inclusion on the National Register..

### 31SC98/31SC98**

Site 31SC98 is located 1,710 m west of US 15/501 and 400 m south of the southernmost east-west runway of the Camp Mackall Drop Zone survey area. It also borders on the northern edge of an east-west sand road. There is no evidence that it extends southward across the road since no artifacts were found on either the surface or in a shovel test. We have, however, left the northern boundary of the site "open," since it is difficult to determine what the site may have looked like prior to the construction of the road. The central UTM coordinates are N3874790 E639030. The site is situated on a slightly eroded ridge crest which slopes 40 m to the south to an intermittent drainage The nearest permanent source of water is Beaver Dam Creek located 775 m to the south. The elevation at the site is 92 m and, based on the surface collection, the boundaries measure about 30 m east-west by 20 m north-south., encompassing an area of 500 m² (Figure 40).

Vegetation at the site consists of sparse grass providing approximately 75% visibility. The initial shovel testing along Transects 126 and 125 (which skirted the site to the east and west) produced no subsurface remains. The site, however, was observed as a scatter of materials north of the road cut.

A controlled surface collection was made using a numerically designated 30 m grid. These remains were collected in a 90 m east-west by 30 m north-south area. The surface collection recovered 87 prehistoric and historic artifacts, all of which were recovered from Collection Unit 1.

Prehistoric artifacts included 15 secondary quartz flakes, 14 secondary metavolcanic flakes, two small sherds, two metavolcanic used flakes, and one proximal portion of a Morrow Mountain II (Coe 1964:37) projectile point. Because the point is broken, no overall length is possible. The blade width, however, is 27.88 and the thickness is 7.10 mm. The stem length is 15.69 mm. These remains are indicative of occupation from the Middle Archaic through the Woodland Period.

Historic artifacts included 10 manganese bottle glass fragments, one milk glass fragment, four light green bottle glass fragments, six clear glass fragments, three melted glass fragments, five salt-glazed stoneware ceramics, fourteen slipped stoneware, nine undecorated whiteware ceramics, and one modern military emblem. This collection suggests an early to mid-twentieth century date.

A 50 cm test unit was centrally placed at the northern edge of Collection Unit 1 where there was minimal surface disturbance. Excavated to a depth of 50 cm a total of three artifacts were recovered. These included one burnt glass fragment and one burnt whiteware sherd at 50 cm to 60 cm and one Early Woodland Badin Cord Marked sherd from the 70 to 80 cm level.

Like 31SC97, this site also revealed a complex, and likely disturbed, soil profile. From 20 to 25 cm dark yellowish brown (10YR3/4) sand was encountered. This overlaid 75 cm of strong brown (7.5YR5/8) sand, with an intrusive layer of 20 cm of dark yellowish brown (10YR3/4) sand at 40 cm and another at 50 to 70 cm below surface (Figure 40).

Designating the southeast corner of the test unit N200E200, an additional 12 shovel tests were excavated in a cardinal grid pattern at 5 to 15 m intervals. All shovel tests were excavated to depths ranging from 50 to 75 cm below surface. In spite of this coverage, no artifacts were recovered during the close interval testing.

The soils are classified as Lakeland sands and strong brown sands are typically encountered at 37 or more cm below surface (Hudson 1984). The convoluted nature of the test unit profile indicates that the site has been heavily impacted, most likely from military operations and landscape modification during training exercises.

The site did produce a small sample of Badin ceramics and further investigation of this assemblage would help us to better understand the relationship between the cultural assemblages found on the Coastal Plain and those more typical of the Piedmont. In a similar fashion, the presence of the small, but diverse, assemblage of historic remains suggests the possibility of a small tenant house. Since the Fort Bragg area has historically been sparsely settled and characterized by small

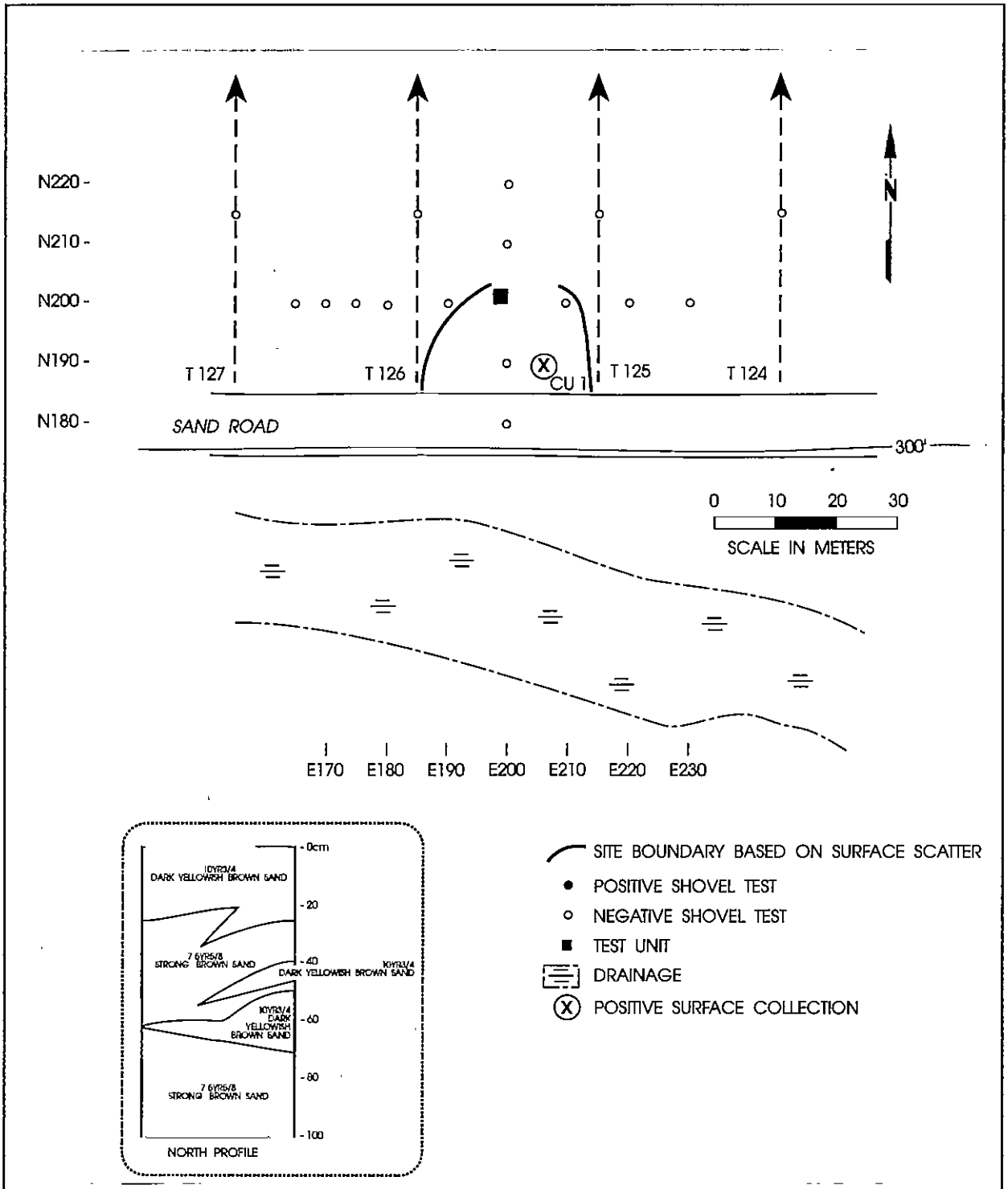


Figure 40. Map of 31SC98/31SC98** and test unit profile.

farms, the exploration of intact late nineteenth and early twentieth century settlements should also be a priority.

Unfortunately, site 31SC98/31SC98** has been heavily disturbed and produced a very constrained assemblage of prehistoric remains. There is no indication of intact architectural features associated with the historic assemblage. With the limited data sets and extensive site damage, it is unlikely that this site can address significant research questions. It is consequently recommended as not eligible for inclusion on the National Register of Historic Places. No further management activities are recommended for this site.

### 31CD455**

Site 31CD455** is located 810 m west of the intersection of Manchester Road and Old Gruber Road and 40 m south of Manchester Road. The central UTM coordinates are N3894490 E677560. The site is located on a slight slope northwest of a base garden plot. The nearest source of water is McPherson Creek located 100 m to the southeast. The elevation of the site is 55 m and based on the shovel testing the site is estimated to measure about 30 m east-west by 13 m north-south. It encompasses about 200 m² (Figure 41). A total of six artifacts were recovered from shovel tests.

Vegetation at the site is a mix of pine and hardwood with scrub oak understory. Surface visibility was non-existent and no surface collections were made. The site was initially encountered through the recovery of two undecorated whiteware ceramics in Shovel Test 1 of Transect 27. Fourteen additional shovel tests were excavated at 10 m intervals in the cardinal directions from the original positive test. Each was taken to a depth of 40 to 60 cm. Only one of these, N200E180, yielded additional materials — four small, undecorated whiteware ceramics.

A 50 cm test unit was centrally located between the two positive shovel tests locations (adjacent to N200E190) and excavated to a depth of 50 cm. No artifacts were recovered from the test unit. The soil profile of the test unit revealed a very dark gray (10YR3/1) sand to 30 cm overlaying 20 cm of pale brown (10YR6/3) sand (Figure 41). Although not precisely matching the typical profile, the soils in the site area are classified as the Kalmia Series. It appears that the site exhibits some mixing or homogenization of the upper A and E horizons, with the pale brown sand perhaps representing the C horizon. If so then it appears that even in this relatively protected, wooded area of Fort Bragg there has been significant soil loss.

The artifacts recovered during testing indicate a mid-nineteenth through possibly mid-twentieth century site. While it's possible that these remains are reflective of a dispersed farmstead or tenant house, they are almost so sparse as to suggest some form of dispersed, perhaps even accidental, refuse disposal. As previously mentioned, the exploration of historic settlement in the Fort Bragg area should be a priority. However, this site does not appear to possess either the data sets, or integrity, necessary to address these issues. Consequently, site 31CD455** is recommended as not eligible for inclusion on the National Register of Historic Places.

### 31CD456

Site 31CD456 is located 1,320 m west of the intersection of Manchester Road and Old Gruber Road and 120 m south of Manchester Road. The central UTM coordinates are N3894510 E678120. The site is located on a slight slope north of a tributary to McPherson Creek. In terms of a permanent water source, the site is situated about equidistant from both the Lower Little River, 600 m to the north, and the main channel of McPherson Creek, about 500 m to the southeast. The site is situated at an elevation of about 55 m and the shovel testing revealed that the site measures about 20 m east-west by 30 m north-south. Materials were found over an area of about 400 m² (Figure 42). A total of 11 artifacts were recovered from shovel test pits and test units.

Vegetation at the site is a mix of pine and hardwood with a scrub oak understory. Surface visability was non-existent and no surface collections were made. The site was

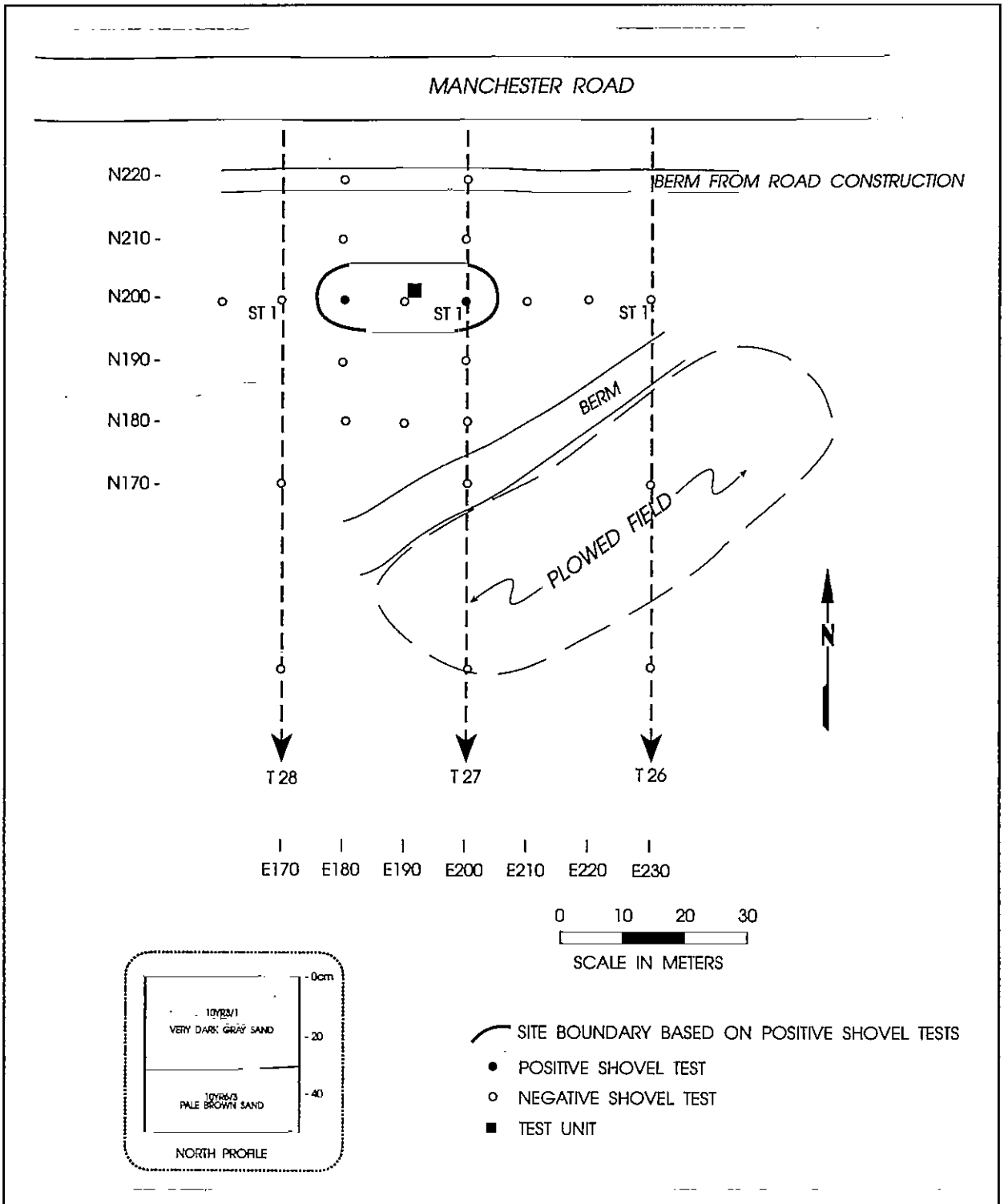


Figure 41. Map of 31CD455** and test unit profile.

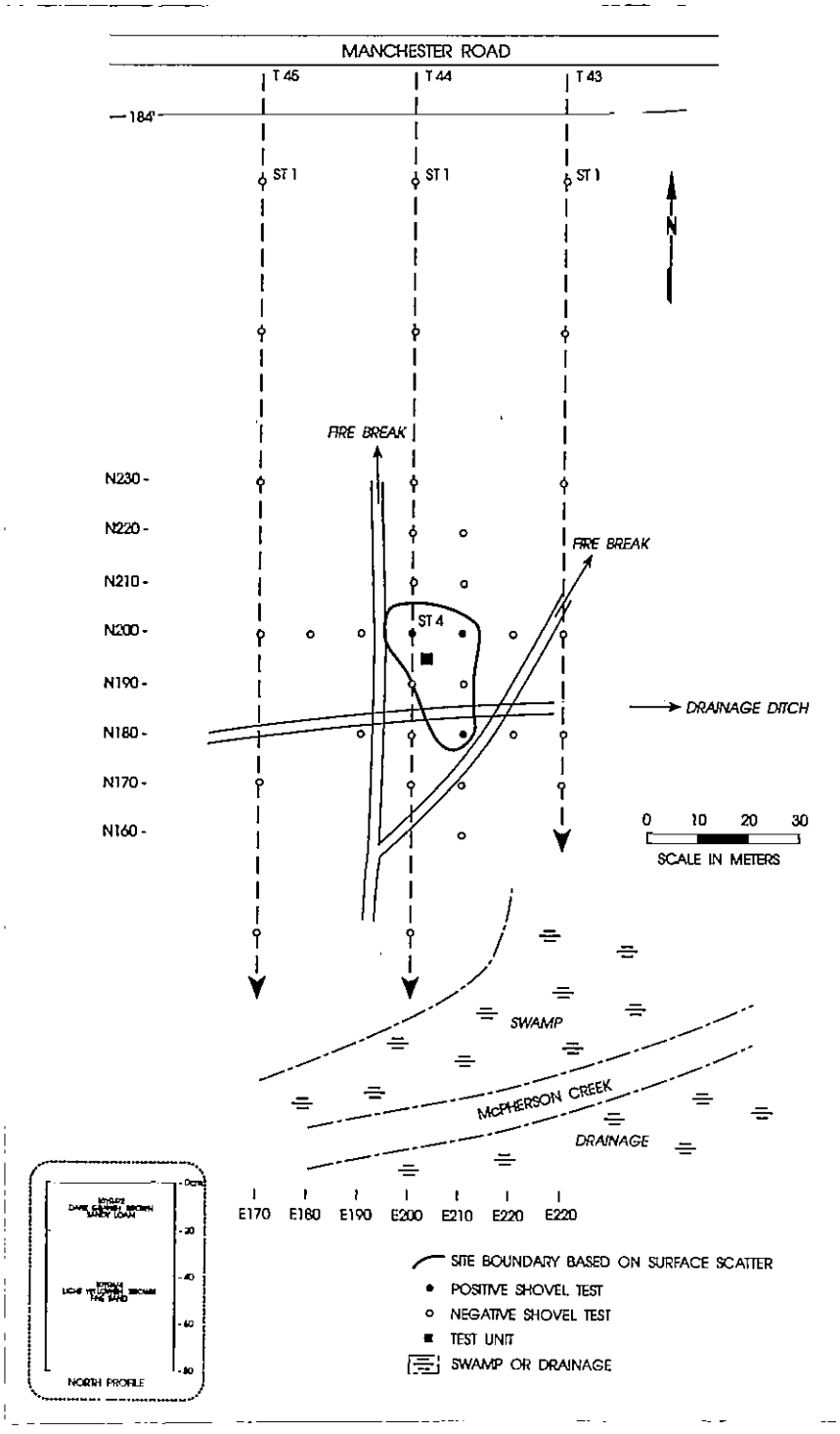


Figure 42. Map of 31CD456 and test unit profile.

encountered during routine shovel testing. Two quartz flakes were recovered from Shovel Test 4 on Transect 44 at a depth of about 25 cm.

Once encountered, 17 additional shovel tests were excavated, at 10 m intervals, in cardinal directions from the original positive shovel test. All shovel test pits were excavated to a depth of 60 cm to 75 cm. Of the 17 shovel tests two (11.8%) yielded subsurface remains. Shovel Test N200E210 produced one quartz flake from a depth of less than 30 cm, while Shovel Test N180R210 produced three metavolcanic flakes, again within the upper 30 cm.

A 50 cm test unit was located along the hypotenuse of the three positive shovel test locations and excavated to a depth of 80 cm. A total of five artifacts were recovered from the 20 cm to 30 cm level. These included three fragments of raw material and two secondary quartz flakes. The soil profile of the test unit was a dark grayish brown (10YR4/2) sandy loam to 20 cm overlaying 60 cm of light yellowish brown (10YR6/4) fine sand (Figure 42). The soils for this site are identified as Lakeland sands and this is entirely consistent with the recovered soil profile where an Ap horizon overlays a deep C horizon.

No diagnostic artifacts were encountered during testing, but the site may have been used as a lithic work station. While four of the 19 excavations (21.1%) produced artifacts, the data sets are regrettably limited to debitage. No evidence was encountered of features (which of course isn't surprising considering the generally loose and unconsolidated sands). All of the specimens were found within the upper 30 cm of the site, suggesting possible inclusion or mixing of materials from a lower level with the upper A horizon soils.

It seems unlikely that this site exhibits either the data sets or the integrity to provide meaningful information regarding significant research topics. The information the site *can* provide, primarily on settlement and association with environmental zones, has been recovered through the current survey. Consequently, we recommend 31CD456 as not eligible for inclusion on the National Register of Historic Places. No further management activities are necessary.

**Isolated Occurrences**

These investigations produced a small number of what are termed "isolated occurrences," or materials found from single shovel tests on transect surveys. In each case the initial finding was treated as a site and a minimum of two additional shovel tests were excavated off the positive shovel test in cardinal directions. Consequently, for each isolated occurrence there was an initial positive shovel test and a minimum of eight negative tests.

Had additional positive tests, or surface material, been found, these occurrences would have been elevated to sites. Since no further material was found, they remain as isolated finds.

Detailed individual site maps are not provided, since in every case such maps would be of no assistance in re-locating the site, establishing its boundaries, or understanding its setting. We have provided small scale sketch maps (Figure 43), however, to help the reader better understand the testing methodology. These occurrences have been given site numbers and are also shown on Figures 24 and 25.

All of these isolated occurrences, by definition, are normally considered not eligible for inclusion on the National Register of Historic Places by the State Historic Preservation Office and we are in concurrence with this assessment for each site.

**31SC99**

One primary metavolcanic flake was recovered from Transect 128 Shovel Test 5 at a depth of approximately 60 cm below surface. Close interval testing in cardinal directions was performed at 10 m intervals. None of the eight shovel test pits yielded any artifacts. The central UTM coordinates of this occurrence are N3874745 E639860. These coordinates do not conform with any site locations discovered during Loftfield's 1979 study.

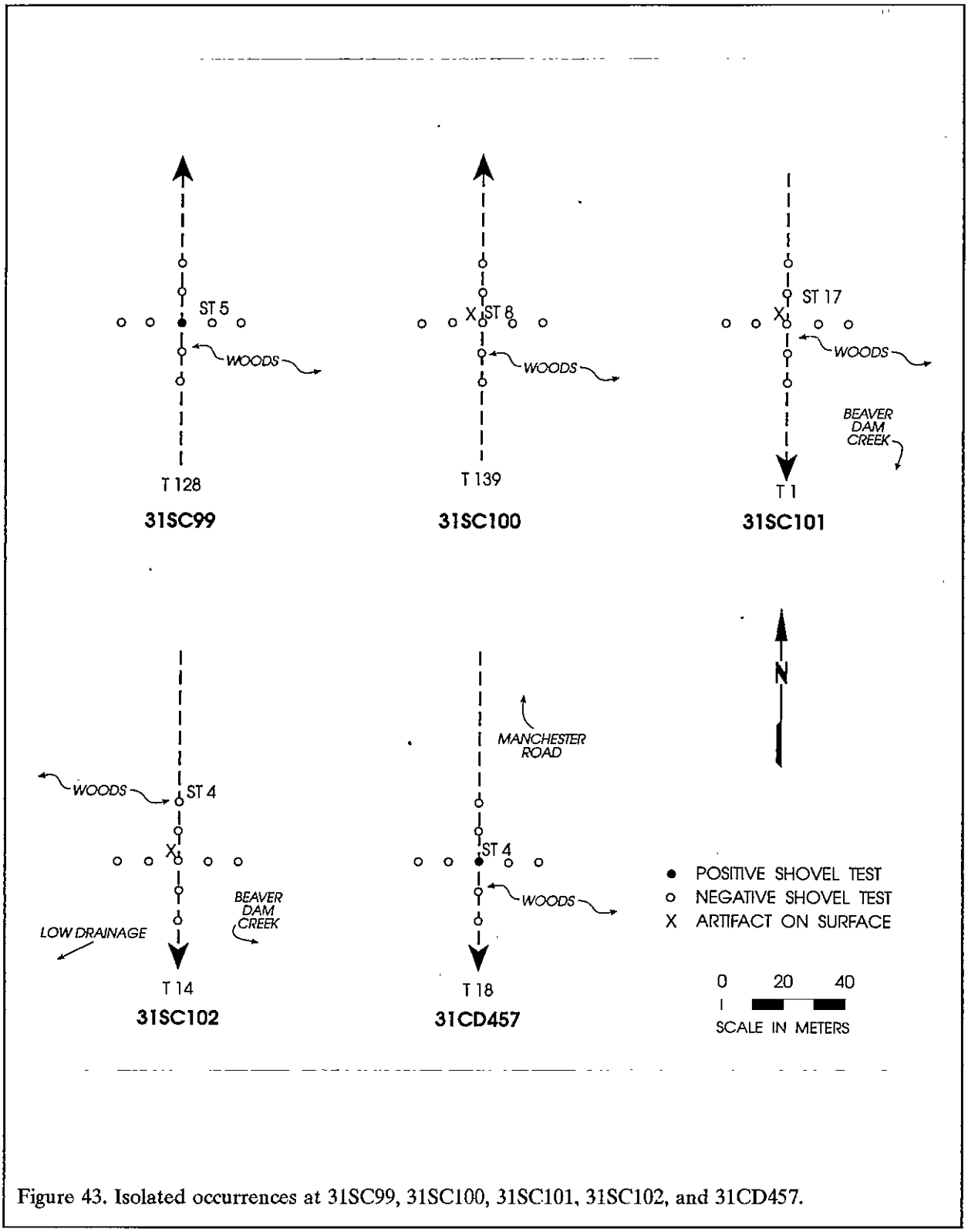


Figure 43. Isolated occurrences at 31SC99, 31SC100, 31SC101, 31SC102, and 31CD457.

The site is situated about 1,860 m west of US 15/501 and 440 m south of the southernmost runway of the Camp Mackall Drop Zone. It was found in a relatively level wooded area at the head of a small intermittent drainage flowing southward into Beaver Dam Creek, about 1,500 m to the south.

### 31SC100

One heavily tempered Yadkin Fabric Impressed sherd was collected on the surface at Transect 139 Shovel Test 8. Close interval testing was conducted in cardinal directions at 10 m intervals. None of the nine shovel tests (one at the location of the surface find and eight at cardinal directions) yielded any artifacts. The central UTM coordinates are N3875880 E640800.

This location is 30 m north and 20 m west of the location assigned by Loftfield for site 31SC74. However, in consultation with the Archaeology Branch it was determined more appropriate to assign a new site number than "assume" that Loftfield's site was mislocated, especially given the time which has elapsed and the damage which has occurred since his study.

The site is situated 930 m west of US 15/501 and south of the northernmost east-west Camp Mackall Drop Zone road. It is situated on a slight ridge overlooking the Drowning Creek drainage to the north. The area is wooded with only about 5% surface visibility.

### 31SC101

One metavolcanic flake with retouch or possible use along one edge was collected on the surface about a meter from Shovel Test 17 on Transect 1. Close interval testing was conducted in cardinal directions at 10 m intervals. Neither the transect shovel test nor the eight shovel tests surrounding it yielded any artifacts. The central UTM coordinates are 3874440 E639830.

The site is situated 1,890 m west of US 15/501 and 780 m south of the southernmost runway of the Camp Mackall Drop Zone. The area is heavily wooded and the site is found on a terrace overlooking the swamps of Beaver Dam Creek to the south.

### 31SC102

One metavolcanic distal portion of a transversely fractured projectile point was surface collected 19 m south of Shovel Test 4 on Transect 14. While it is almost impossible to identify a point type based solely on the blade, the specimen (based on metric and flaking attributes) strongly resembles a Savannah River Stemmed form. The partial blade measures 49.31 mm in length and 40.83 mm in width. The blade is 9.08 mm in thickness.

An additional shovel test was excavated at the location of this point and a eight tests were placed in a cruciform pattern around the surface find. None of the nine shovel tests were positive.

The site is situated 1,590 m west of US 15/501 and 580 m south of the southernmost runway at the Camp Mackall Drop Zone. The central UTM coordinates are N3874620 E640140. The occurrence was found in an area of rolling sand hills on the back edge of a ridge overlooking Beaver Dam Creek to the southeast and a small tributary of the creek to the southwest and west. The site area is heavily wooded with only about 2% site visibility.

### 31CD457

One metavolcanic flake was recovered from Shovel Test 4 on Transect 18 at a depth of 30 cm. This particular shovel test was extended to a depth of 60 cm, but no further remains were encountered. Close interval testing was conducted at 10 m intervals in the cardinal directions. None of these additional eight tests, all of which were excavated to between 50 and 60 cm, produced any materials. The central UTM coordinates of this site are N 3894400 E678340.

The site is situated 90 m west of the Manchester Road and Old Gruber Road intersection and 120 m south of Manchester Road. It is situated in an area of rolling topography about 50 m south of a very small drainage. The area is

heavily wooded and no surface materials were encountered.

**Unlocated Sites**

A number of the sites which were identified by Loftfield (1979) could not be relocated during this current survey. This are probably due to one or more reasons: 1) they have been destroyed; 2) they are covered with colluvium and could not be relocated with our shovel tests; 3) they were not accurately located by the previous survey and actually correspond with one of our new sites or new occurrences; 4) they have been entirely collected, or 5) were outside of the survey area. Nonetheless descriptions given by Loftfield are provided with an explanation, where possible, as to why they may not have been relocated.

### 31SC64

Site 31SC64 was described as being located south of the old cantonment of Camp Mackall at a point 35 meters north of the bridge over Beaver Dam Creek and 100 meters east of the drop zone border road. Surface collected were four grit tempered and two sherd tempered sherds and three flakes. No subsurface testing was performed and no additional work was recommended (Loftfield 1979:G-54). The described location could be re-identified, but no remains were encountered. It seems likely that the site has been entirely collected.

### 31SC65

Site 31SC65 was described as being located at a point 35 meters north of the bridge over Beaver Dam Creek on the road running south past the west end of the Camp Mackall Drop Zone and 725 m east, around a spring near a small toe slope. Surface collected were one biface fragment, three crushed quartz tempered sherds, and three flakes. No subsurface testing was performed and no additional work was recommended (Loftfield 1979:G-54). The general area of this site was identified, but no remains could be found. This site may have been entirely collected.

### 31SC67

Site 31SC67 was described as being located on an improved road leading south past the west end of the Camp Mackall Drop Zone 35 m north of Beaver Dam Creek. This track continued past a turn it makes on the drop zone, the location of site 31SC66, and then back south along the stream for 150 m. Fourteen grit tempered sherds, one historic sherd, and six flakes were collected from the surface. No subsurface testing was performed and no additional work was recommended (Loftfield 1979:G-55). This location could not be precisely correlated with current conditions. Consequently, while it is possible that the site was entirely collected, it may also be that the site was mislocated.

### 31SC69

Site 31SC69 was described as being located on an east turn 35 meters north over the bridge on Beaver Dam Creek. This dirt track led to a second smaller drainage that opens into the drop zone clearing at 2,100 meters from the improved road. The site is 520 m south of the southeast corner of the old cantonment of Camp Mackall on the south side of the drop zone. Surface collected were eight grit tempered and sherd tempered sherds and 25 flakes. No subsurface testing was performed and no additional work was recommended (Loftfield 1979:G-55). No area precisely corresponding to this description was found and the area shown on the topographic map produced no remains. This site may have been entirely collected.

### 31SC70

Site 31SC70 was described as being located 800 m southeast of the southeast corner of the old Camp Mackall cantonment on the dirt track that borders the south side of the drop zone. Collected were 47 flakes. No subsurface testing was performed and no additional testing was recommended (Loftfield 1979:G-61). This site may have been entirely collected.

### 31SC73

Site 31SC73 was described as being located at a point 600 m south of Drowning Creek on an unimproved road. At 120 m this road is diverted north. At 160 m and on the east side of this diversion is the site, 30 m south of the corner of Camp Mackall. Two sherds and two flakes were surface collected. No subsurface testing was performed and no additional work was recommended (Loftfield 1979:G-56). This site may have been entirely collected.

### 31SC74

Site 31SC74 was described as being located east on the road connecting the old Camp Mackall cantonment to U.S. highway 15/501, 500 m past the cantonment loop road at the head of a low spring source. One biface fragment, one feldspar tempered sherd, and 20 flakes were collected from the surface. No subsurface testing was performed and no additional work was recommended (Loftfield 1979:G-56). This site may have been entirely collected.

# CONCLUSIONS

**Introduction**

As a result of the intensive survey of the 230 ha Camp Mackall Drop Zone at Camp Mackall and the 70 ha Manchester Road tract at Fort Bragg, 22 archaeological sites were recorded or revisited, including five isolated occurrences. While Table 4 lists those sites currently identified, Table 8 correlates the current sites with Loftfield's original findings, revealing also those sites which can no longer be relocated. Of the resources, one site (31SC88) is recommended as potentially eligible for inclusion on the National Register of Historic Places.

The Camp Mackall study tract, which was largely cleared with excellent surface visibility, yielded a site density of 6.5 sites every km², if only the archaeological sites are taken into account and occurrences are excluded. If all the archaeological resources identified on the tract are considered, the site density increases to 8.3 sites every km².

Turning to the Manchester Road survey area, this study found a density of 2.9 sites per km² when the occurrences are excluded or 4.3 sites per km² when they are added.

The findings from Camp Mackall are somewhat lower than reported for the Sicily Drop Zone on Fort Bragg proper, where 7.2 to 22.4 sites per km² were found (Trinkley et al. 1996:135). The density from the Camp Mackall study is also below the average density of 10 sites per km² estimated by Loftfield (1979) or 11.3 sites per km² estimated by Abbott et al (1995:35). The Manchester Road study area is even more sparsely settled.

Certainly the very low density from the Manchester Road tract is a reflection of the greater distance in this area to a major drainage. The three sites found were, in each case, associated with either the McPherson Creek or Cypress Creek drainage. But these drainages appear to have been too small to either attract, or support, any large settlement. Such a simple explanation is not, however, appropriate for the Camp Mackall tract, where Beaver Dam Creek is found along the southern margin and swamps are found along the eastern boundary. Perhaps the simplest explanation is that these results provide some concept of the normal range of variability which we might expect to see in the region controlling for bias and recovery techniques. This, however, will be discussed in somewhat greater detail in a following section.

The bulk of the sites and occurrences are prehistoric. Only one of the 22 sites (4.5%) does not have a prehistoric component.

Table 8.
Sites in the Camp Mackall Drop Zone and Manchester Road Survey

| Site # | Current Status | Site # | Current Status |
|---|---|---|---|
| *Camp Mackall Drop Zone Survey* | | 31SC92 | NE |
| 31SC64 | NE - not relocated | 31SC93 | NE |
| 31SC65 | NE - not relocated | 31SC94 | NE |
| 31SC66/66** | NE | 31SC95 | NE |
| 31SC67 | NE - not relocated | 31SC96/96** | NE |
| 31SC68 | NE | 31SC97 | NE |
| 31SC69 | NE - not relocated | 31SC98/98** | NE |
| 31SC70 | NE - not relocated | 31SC99 | NE - occurrence only |
| 31SC71 | NE | 31SC100 | NE - occurrence only |
| 31SC72 | NE | 31SC101 | NE - occurrence only |
| 31SC73 | NE - not relocated | 31SC102 | NE - occurrence only |
| 31SC74 | NE - not relocated | | |
| 31SC75 | NE | *Manchester Road Survey* | |
| 31SC87/87** | NE | 31CD455** | NE |
| 31SC88 | PE | 31CD456 | NE |
| 31SC91 | NE | 31CD457 | NE - occurrence only |

Nevertheless, five sites (22.7%) have a historic component. This suggests a significantly greater historic utilization of these study tracts than encountered in the Sicily Drop Zone study where only one of the 125 sites revealed historic materials (representing 0.8%). Like the Sicily study area, however, the current project revealed only sites dating, at the very earliest, from the mid-nineteenth through perhaps as late as the mid-twentieth century. No evidence of early settlement in the Fort Bragg area has been encountered and the assemblages recovered appear to reflect either isolated refuse disposal or, at best, small tenant sites which have been heavily impacted by military activity.

The majority of the prehistoric artifacts consist of quartz and metavolcanic lithic debitage. Relatively few tools were recovered, while even fewer examples of pottery were found. A total of 2,730 artifacts were collected from the 17 sites and five specimens were recovered from the five isolated occurrences.

Issues discussed in these conclusions include site attrition, site size and identification, prehistoric land use, site density, lithic resource use, artifacts, and general recommendations.

## Site Attrition

It seems hardly necessary, and perhaps even inappropriate, to once again emphasize the extraordinary attrition of archaeological resources present in the Fort Bragg — Camp Mackall area. The concern was carefully outlined in a previous survey of the Sicily Drop Zone (Trinkley et al. 1996:136-139). The causes for this attrition at the Sicily Drop Zone were thought to include human intervention, especially collecting of materials which are constantly being exposed, coupled with the severe erosion in the open and desert-like conditions of the drop zones.

The impact of collecting in the Camp Mackall tract is considerably more difficult to assess. When Loftfield's collections are compared to those made during the current study there is no noticeable difference in the range of materials. In most cases our collections are significantly greater than those made by Loftfield. For example, at 31SC66/31SC66** Loftfield collected only 36 flakes, compared to our 216 specimens. At 31SC68, where Loftfield made a relatively large collection of 224 objects, this study recovered 414. In fact, there is only one site, 31SC75, where Loftfield's study produced materials (grit tempered sherds) not duplicated by this study.

Of course Loftfield's survey techniques were different from ours and it is very hard to compare the results of the two different surveys. Regardless, there are no significant differences in the collections like those seen at the Sicily Drop Zone.

Natural effects, however, appear to be as significant to our understanding of the resources at Camp Mackall as at Sicily. In both cases the amount of soil loss, as documented in soil profiles, is staggering. The amount of wind blown sand, in both cases, is reminiscent of the "Dust Bowl." And in both cases there is monthly, if not daily, uncovering of additional archaeological materials.

Throughout this study the single most common factor weighing against the eligibility of archaeological sites was the lack of site integrity, attributable to soil loss or erosion. This problem is caused by a combination of the nature of the soils and the nature of the military operations which take place on the bases.

We concur with the previous assessment, made for the Sicily Drop Zone, that the combination of factors affecting these sites has, and continues to, severely damage the research potential of these resources. In a similar manner, it is very important to understand the factors affecting both the previously gathered information and the current information, before evaluating the conclusions generated. Some data, such as site location, are valid since there has probably been little lateral movement of the artifacts (an exception to this may be erosion of materials downslope, a situation suggested for 31SC94). But statements regarding the contents of these sites and how they reflect site function should be taken with caution.

**Site Size and Identification**

Sites at the Camp Mackall Drop Zone and the Manchester Road tract ranged in size from just small scatters of debitage in a 10 m area to large scatters of remains across several transects. These sites ranged from 80 m² to 21,600 m² (Table 4). This range is very close to that found from the Sicily Drop Zone study, suggesting that it may be reflective of the cultural parameters operating in the study area (i.e., that cultural activities rarely are contained in smaller areas or are spread over significantly larger areas, *in this particular study area*).

The Sicily Drop Zone study revealed that many of the sites identified in the denuded tract could never have been found through routine shovel testing. In fact, it was suggested that only 17 of the 125 sites would have been recoverable using traditional shovel testing techniques in a heavily vegetated area. Site density would fall to only about 4 sites per km².

The Camp Mackall and Manchester Road surveys provide further support.

If only those six sites found in vegetated areas (31SC91, 31SC92, 31SC93, 31SC94, 31CD455, and 31CD456) are considered the importance of shovel testing is clear. Five of these six sites (all of which are relatively small, with an average size of only 218 m²) were found through shovel testing and no surface material was encountered. In any form of pedestrian survey these five sites would not have been recovered. Curiously, the sixth site was missed by shovel testing and was only identified by the fortuitous exposure of flakes by a foxhole.

Although found by shovel testing, these sites provide mixed evidence for the usefulness of 50 cm tests. Three of the test units produced no additional material, while three others yielded small quantities of additional materials. Of course, in all cases the units did provide soil profile information.

Moving on to the 11 sites found in relatively open settings through pedestrian survey (31SC66, 31SC68, 31SC71, 31SC72, 31SC75, 31SC87, 31SC88, 31SC95, 31SC96, 31SC97, and 31SC98) only two (18.2%) produced materials in the routine transect shovel tests. Consequently, all would have been found through simple pedestrian survey, while only about a fifth would have been found had shovel testing been used to the exclusion of sharp eyes. The average size of these sites is 4,418 m², with a range of from 500 m² to over 21,000 m².

Test units again reveal very mixed results. Only five of the 11 units produced additional artifacts. But, of course, these units provide important information on soils and stratigraphic development.

Perhaps more revealing is the information concerning the additional shovel testing to establish boundaries and explore site integrity. In only three of the 11 cases did this shovel testing produce any positive results. In the other seven cases (one site was not shovel tested since it was heavily damaged), the testing provided no additional evidence of artifactual material. When materials were found, the average number of positive tests was only 10.3%. If the data from all of the sites where shovel testing was negative are added, the rate of positive shovel tests plummets to 2.8%.

It is also useful to compare the results of site boundaries established through surface collection with site boundaries which might be established using only close interval shovel testing in the absence of controlled surface collecting. Of the 11 surface collected sites, the close interval testing altered site boundaries in only two cases (31SC66 and 31SC88) and in both cases the changes were minor. For the remainder of the sites, boundaries would have been considerably, perhaps even dramatically, less accurate had controlled surface collections not been undertaken.

These findings are important not only for what they tell us about the limitations of traditional shovel testing, but also for what they tell us about the shovel testing sites found in open conditions.

While it is unlikely that anyone is surprised that shovel testing is far less accurate than we would like it to be, the results of the Sicily and Camp Mackall surveys provide some significant data on just how ineffectual even the best shovel testing surveys are, especially at finding the complete range of prehistoric and historic sites. As we have noted in the past, the vast majority of these sites being missed by shovel testing are probably not significant resources in the context of the National Register of Historic Places. Some. however, may be. They may, for example, provide important information on unique or rare site types. Further, the information that even small, seemingly insignificant sites provide allows a much more complete view of prehistoric settlement and land use. It can be argued that such information is essential in our quest to understand how prehistoric and historic populations interacted with and affected the landscape.

Our experience indicates that shovel testing is often *less* time consuming than surface collecting. For many of the Camp Mackall sites, for example, shovel testing required only one or two person hours, compared to perhaps four to six person hours for controlled surface collections. Yet, shovel testing cannot provide the detailed information on site boundaries, temporal periods of occupation, range of artifact types, or artifact density that results from controlled surface collections.

More importantly, these data also suggest that close interval shovel testing of sites denuded of vegetation may not be the best use of available resources, especially if such testing requires the abandonment of carefully controlled surface collections. While it is important to obtain an understanding of subsurface conditions — the presence of features, soil stratigraphy, and the possibly of intact site areas — such information may be more cost effectively achieved through a *combination* of surface collections and shovel testing.

Such a combination of techniques in denuded areas, while perhaps not meeting the specifications of the current work orders, would ensure the collection of higher quality data — information which could better interpret these sites and help manage the resources of Fort Bragg.

**Prehistoric Land Use**

The ability to offer detailed observations concerning changing land use was constrained by both the small survey parcels and the relatively small number of sites encountered. We can not, for example, offer the level of detailed analysis provided by either the Sicily Drop Zone survey (Trinkley et al. 1996) or Loftfield's (1979) original study. Nevertheless, some general observations are appropriate.

As discussed in the environmental overview, the Manchester Road area consists of relatively broad flats up to 0.5 km from Little River. The area includes two small drainages — Cypress Creek about in the middle and McPherson Creek at the eastern end. Neither are particularly large and there are very limited areas of sandy ridges or bluffs overlooking the drainages. In general, the ground gradually slopes into low drainage troughs. The survey tract is dominated by well drained soils, which comprise 93.3%of the tract. The most prevalent are the Gilead soils, which are found on about 36.2% of the tract. The next most common are the Blaney soils, which comprise 26.7%.

Two of the three sites found in this tract are associated with the well drained Kalmia soils (which occur on only 9.5% of the tract) and one is associated with the well drained Lakeland soils (found on only 17.1% of the property). In other words 100% of the sites are found on soils which occur on slightly over a quarter of the soil area. Although the sample is very small, it appears that there may be a preference for some soils (or soil settings) over others.

All three of the sites are in fairly clear association with one of the small drainages on the survey tract. None of the sites are found very far from a drainage (even if it is intermittent), such as in the interior broad flats. While there are no ridge noses or sandy bluffs overlooking broad expanses of river or creek swamp (a factor which likely

reduced occupation in this area), those sites which are present were located to take advantage of a water source.

The Camp Mackall area represents greater environmental and topographic diversity. To the east is the swamp associated with Drowning Creek, while to the south are the terraces and ridges overlooking Beaver Dam Creek. While the northern portion of the survey tract includes some broad expanses of upland soils, the southern, or lower, portion of the tract is broken up by small drainage fingers from Beaver Dam Creek extending northward, creating what we might expect to be a more hospitable environment for prehistoric people, since it offers greater environmental diversity and increased proximity to swamp ecotones.

It therefore probably won't be surprising that all but two of the 19 sites encountered on the Camp Mackall tract were found in the southern half, around the ridges overlooking Beaver Dam Creek.

Although there are 11 different soils present in the Camp Mackall Drop Zone survey area, over two-thirds of the tract (69.4%) is well drained. The most common well drained soils are the Lakeland sands, which account for about 48.1% of the tract. The next most common well drained soil is the Wagram Series, which accounts for only 7.1% of the study area, followed by the Eustis Series which is found on only 5.5% of the survey area.

Sixteen of the 19 sites are found on Lakeland soils. The remaining three sites are found on Wagram soils. Consequently 100% of the identified sites are found associated with only two of the 11 soil series present. They occur on soils which account for 55.2% of the total area. Of course, these soils are also those most closely associated with the ridges overlooking Beaver Dam Creek.

Just as with the Sicily Drop Zone survey, there are some topographic settings at both Camp Mackall and Manchester Road which were not used, in spite of their seemingly good locations. For example, in the Manchester Road survey area the northwest and west facing ridge slope overlooking McPherson Creek is unoccupied. So too is the similar setting south of Manchester Road at Cypress Creek.

Perhaps somewhat easier to explain is why there is a clear preference for the ridge slopes overlooking Beaver Dam Creek, leaving the Drowning Creek border unoccupied. In this case there are clear ridges or topographic highs overlooking Beaver Dam Creek. In contrast, the ground more gently slopes from the highland into the swamp at Drowning Creek. Only where a clear ridge is present, in the western corner of the survey tract, are sites (31SC75 and 31SC100) found associated with a tributary of Drowning Creek.

As with the previous Sicily Drop Zone survey, we see tremendous variation in the slope face selected. While Loftfield's (1979) reconnaissance found most sites associated with an east, north, and northeast slope face, he found the largest sites located on north or northeasterly facing slopes. In the Sicily survey (Trinkley et al. 1996) slope face selection appears to have varied by drainage, with those on Jumping Run Creek most commonly on east or southeast slope faces and those on Deep Creek preferring a northwest slope face.

In the current study there is a clear preference for southern and southeastern exposures, which account for 60% of the sites. Southwestern facing sites account for an additional 13.3%.

Significantly, the soil survey (Hudson 1984) reports the prevailing winds are from the southwest. This, of course, would mean that the bulk of the sites found in the Camp Mackall area would be facing into the wind.

According to Brown and Morgan (1983:24) there are a number of factors to consider when locating a camp site. For instance, southern exposures provide the longest lasting heat and light and, of course, locating a camp on the east side of a ridge provides protection from the wind and blowing rain. This also provides quicker warmth

during the morning hours.

What these findings mean, quite honestly, is impossible to ascertain with the current sample. One explanation may be that prehistoric people used a wide range of diverse topographic settings and the data are, essentially, meaningless. Another interpretation is that the Camp Mackall sites were predominately cool weather camps sited to take advantage of the warming sun. Yet another interpretation is that many were short-term hunting camps situated to take advantage of resources in the Beaver Dam Creek drainage, with the prevailing winds forcing the smell of the camps and their occupants away from the lowland prey. Although a simple answer is not (as yet) possible, the data being generated by the survey of a variety of relatively large landforms in the Fort Bragg and Camp Mackall area are very significant since they will allow questions such as this to be addressed.

The temporal distribution of site components found in the current study is similar in some ways to that generated by either Loftfield's reconnaissance or the previous Sicily Drop Zone Survey, while distinct in other ways. A good bit of the differences can most easily be explained by the small sample size of the current research — only 21 components. In fact, considering the sample size, it is perhaps surprising that we find as much agreement as we do. For example, Paleoindian components in the current study account for about 4.8% (if we include Hardaway in the Paleoindian Period). Of the 151 sites and occurrences recorded by Loftfield and the Sicily Drop Zone survey, 4% produced Paleoindian components.

Early Archaic components (Big Sandy and Kirk) account for 9.5% of the current sample from Camp Mackall, compared to only 4.6% of the combined Loftfield reconnaissance and Sicily survey. Middle Archaic occupation is much more common in both studies, suggesting a tremendous increase in the Native American population or an increased use of the area by outside groups. Middle Archaic components account for 14.6% of the combined Loftfield and Sicily sample, and 28.6% of those at Camp Mackall. While the previous research suggests that Late Archaic components are nearly as numerous, accounting for about 15.2% of the sample, the Camp Mackall sites have a rather spartan Late Archaic assemblage and the component (combining the Savannah and Gypsy) accounts for only 9.5%.

Both samples, however, are dominated by Woodland components. In the combined Loftfield and Sicily data set, they account for 19.9% of the total, while in the current study of the Camp Mackall Drop Zone, they account for 47.6%. Early Woodland materials are not clearly represented in this study and the Late Woodland is represented by only one component (Adam's Creek) accounting for 4.8%. The Mackall data suggests that the Middle Woodland was a period of dynamic expansion — there are nine components present, including seven represented by Yadkin (or Caraway lithics) and two by Hanover.

**Site Density and Function**

Table 9 provides a list of the archaeological sites, their components, size in $m^2$, and the density of artifacts per $m^2$ listed in order of size. Sassaman et al. (1990) suggest that the density of artifacts at prehistoric sites is a useful measure of the relative intensity of material discard at a site stating that the amount of discard is assumed to be proportional to the "cumulative duration of site occupation, and/or the total number of site occupants, and/or the intensity of activities from which discarded debris was generated" (Sassaman et al. 1990:223). Lithic tool manufacture, however, generates a large volume of debris which creates a bias on measures of occupation duration/intensity and Sassaman and his colleagues recommend calculating density for total assemblages and for artifacts other than debitage. Unfortunately, too few artifacts other than debitage are present at these sites, due largely to collecting, so only density based only on the total assemblage could be calculated. They warn that artifact density should only be calculated for subsurface assemblages with an adequate sample size. None of these conditions exist at any of the sites encountered and both surface and subsurface assemblages are examined. Because of these problems, other types of site analysis such as tool to debitage ratio and assemblage diversity were

determined to be inappropriate with the collection obtained during this survey.

An examination of Table 9 shows several things. First, the smaller sites (less than 1000 m²) have a larger range in artifact density (0.01 to 0.30 artifacts per m²) than the larger sites (0.02 to 0.17 artifacts per m²). The mean density for the smaller sites is also considerably higher (0.16 artifacts per m²) for the smaller sites than for the larger ones (0.08 artifacts per m²).

These findings precisely parallel those revealed by the nearby Sicily Drop Zone survey on Fort Bragg (Trinkley et al. 1996). In that study the mean for sites under 1,000 m² was 0.18 artifacts per m², while the mean for the larger sites was 0.03 artifacts per m².

Both studies also found that it was the larger sites that contain diagnostic specimens. This is not surprising since they were likely used for more than just lithic reduction and for longer periods of time than most of the smaller sites. The function of small sites for lithic reduction is reflected in the high density of some of these sites.

Larger sites have a much smaller range of variation from the mean density. Moreover, seven of the eight larger sites also exhibit prehistoric ceramics and several of those sites with the highest artifact density contain one or more Woodland components. A similar situation was also observed with the Sicily Drop Zone assemblage and it was suggested that this may reflect a less mobile lifestyle and therefore longer-term use or multiple visits. Surprisingly, the site with the greatest number of components (31SC88), reflecting use over a very long span (from the Paleoindian through the Middle Woodland), exhibits a very low artifact density. This suggests that while the site location was favored, the activities which took place there were limited, perhaps associated with extractive activities or hunting.

Table 9.
Artifact Density (sites listed by increasing size)

| Site Number | Components | Size (m²) | Density |
|---|---|---|---|
| 31SC93 | Lithic | 80 | 0.30 |
| 31SC94 | Lithic | 80 | 0.23 |
| 31SC91 | Lithic | 200 | 0.20 |
| 31SC92 | Lithic | 350 | 0.01 |
| 31CD456 | Lithic | 400 | 0.03 |
| 31SC98 | Morrow Mountain/Woodland | 500 | 0.18 |
| 31SC95 | Lithic | 700 | 0.29 |
| 31SC97 | Lithic | 900 | 0.06 |
| | | range = 0.01 - 0.30 | |
| | | mean = 0.16 | |
| 31SC66 | Yadkin | 1300 | 0.17 |
| 31SC72 | Hanover/Yadkin | 1400 | 0.09 |
| 31SC75 | Guilford/Morrow Mountain/ Woodland | 1400 | 0.08 |
| 31SC87 | Lithic/Woodland | 2100 | 0.10 |
| 31SC96 | Lithic | 4500 | 0.02 |
| 31SC68 | Savannah/Yadkin | 6100 | 0.07 |
| 31SC71 | Morrow Mountain/Hanover/ Yadkin/Adam's Creek | 8100 | 0.06 |
| 31SC88 | Hardaway/Big Sandy/Kirk/ Morrow Mountain/Guilford/ Gypsy/Caraway/Yadkin | 21600 | 0.03 |
| | | range = 0.02 - 0.17 | |
| | | mean = 0.08 | |

**Lithic Resource Use**

Contrary to the findings of the Sicily Drop Zone survey (Trinkley et al. 1996), where quartz comprised over 63% of the debitage recovered, the Camp Mackall sites reflect a strong reliance on metavolcanic materials, with only 22.1% of the debitage being quartz.

The most reasonable explanation for this difference in use may be distance to the raw material. It was observed that while quartz in the form of river cobbles was locally available in the Fort Bragg area, the closest metavolcanic outcrop is found about 16 km to the west and the large Morrow Mountain quarry is located about 97 km away. In the Camp Mackall area there is no large drainage like the Lower Little River to supply river cobbles, but the project area is considerably closer to metavolcanic rock outcrops, probably only about 6 km further to the west. All other things being

equal, this difference of 10 km may have been sufficient to encourage a reliance on metavolcanics.

Although metavolcanic debitage was in the minority at the Sicily Drop Zone, 76% of all of the projectile points were manufactured from metavolcanic material. Bifaces, biface fragments, and small projectile point fragments were also made more often out of metavolcanics (72%). This suggests that prehistoric occupants preferred to use metavolcanic material for tools which were intended to be curated.

At Camp Mackall, where four-fifths of the debitage is metavolcanic, virtually all of the projectile points and tools are of the same materials. Only one hammerstone and one biface fragment were of quartz. All of the remaining specimens, accounting for 94.3%, were produced from metavolcanic rocks. Although this is a very small collection, it is also worth noting that the reliance on this material appears to be consistent through time. Even the three Guilfords were all flaked from rhyolitic material.

**Artifacts**

A total of 15 projectile points were recovered from the Camp Mackall study (none were recovered from the Manchester Road area). A representative sample of these points is illustrated in Figures 44 and 45.

Although the Sicily Drop Zone survey examined an area about 1.8 times as large as the current study, it yielded only 1.5 times as many projectile points. In other words, points are slightly more common in the Camp Mackall area than they were at Sicily. This, of course, may be the result of greater collector pressure in Fort Bragg where there is greater use.

As has been mentioned several previous times, the points recovered include materials from the Paleoindian/Early Archaic (Hardaway Side Notched) through the Early Archaic (Big Sandy and Kirk) to the Middle Archaic (Morrow Mountain and Guilford) and Late Archaic (Savannah River Stemmed and Gypsy Stemmed). Only one specimen of a Woodland Period point, a Caraway, was recovered.

Other lithic tools are exceedingly uncommon. The current study recovered only two scrappers, one used flake, and one hammerstone (several of which are illustrated in Figure 45).

Pottery, while not common, was found at eight sites and one isolated occurrence. A total of 55 sherds (22 identifiable and 33 small specimens) were recovered, representing about 2.0% of the entire collection. This is a slightly larger proportion than was found in the Sicily Drop Zone (1.7%). Examples of the recovered pottery are illustrated in Figure 46.

The materials were classified as Hanover (n=4), Yadkin (n=14), and Adam's Creek (n=4). The Hanover specimens all contained large quantities of clay inclusions in the paste, resulting in a very lumpy or contorted paste. Examples of both cord marked (n=1) and fabric impressed (n=3) surface treatments were encountered. The Yadkin sherds exhibited the greatest variation in paste, with some exhibiting very large quantities of crushed feldspar and others lesser quantities of subangular quartz sand. The latter might be classified by some researchers as Cape Fear, although we have chosen to lump them all together in the Yadkin classification. They also might have been typed as Mount Pleasant (Phelps 1981) or even the less well known Lenoir or Grifton series (Crawford 1966). All of these, however, were excluded as being too distant from the project area. Ward (1983) suggests that Yadkin may exhibit greater variability than originally identified, based on his work in the White's Creek drainage of South Carolina's Inner Coastal Plain. Cord marking was most common (n=6), although fabric impressed surface treatments were almost as frequent (n=5). Only one plain Yadkin sherd was encountered, although an additional two sherds exhibited an eroded surface.

Four sherds, which most closely resemble Loftfield's Adam's Creek Series (Loftfield 1976:164-166), were also found in the collection. These sherds generally fit the prevailing type description, but had an incised decoration associated with small punctations. This material,

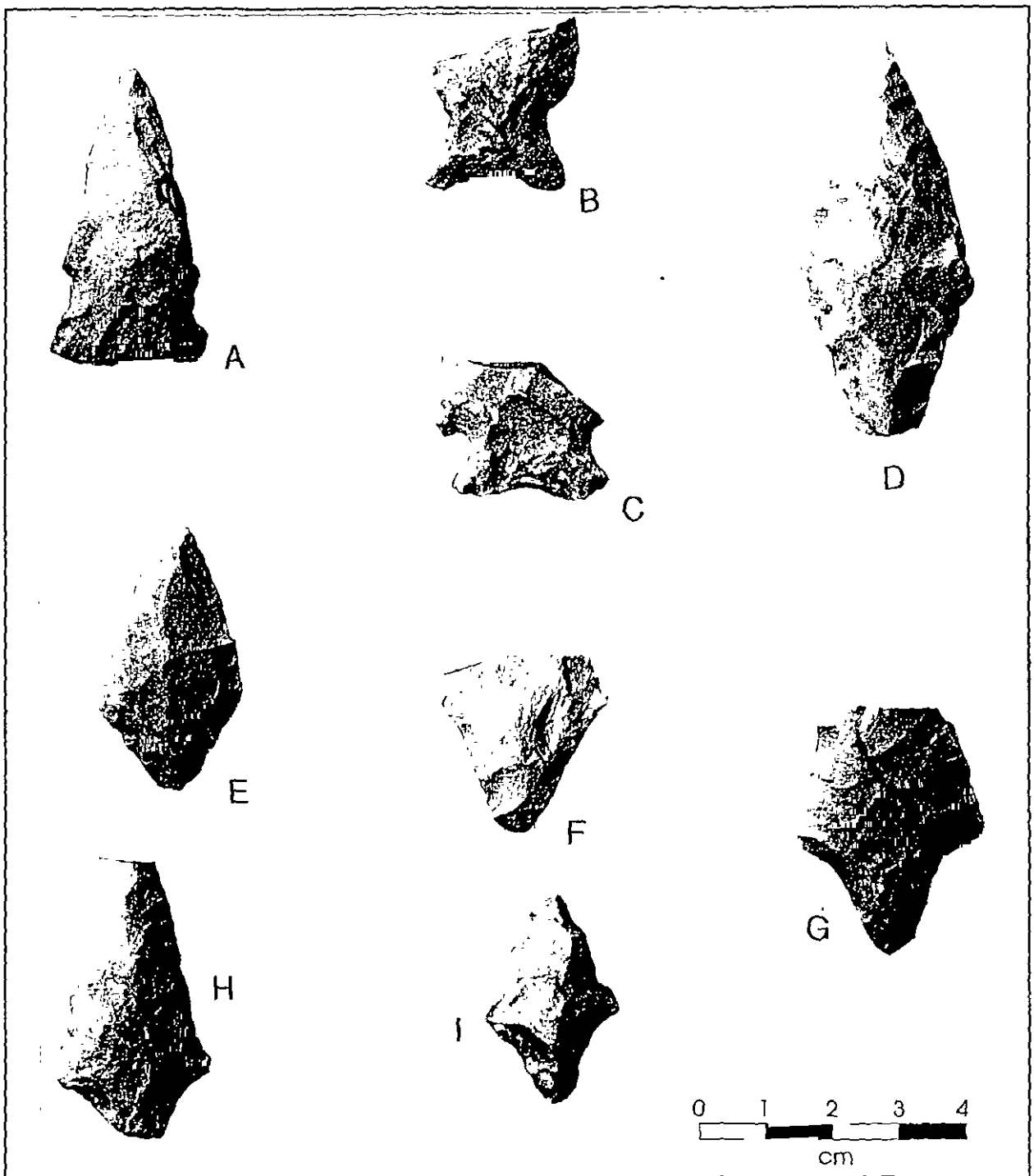


Figure 44. Projectile points recovered from the Camp Mackall Drop Zone Survey. A, Hardaway Side Notched (31SC88); B, Big Sandy (31SC88); C, Kirk Corner Notched (31SC88); D, Morrow Mountain similar to the "Lake Mohave" points identified in North Carolina (31SC71); E, Morrow Mountain I (31SC75); F-I, Morrow Mountain II (31SC75, 31SC98, 31SC88, 31SC71).

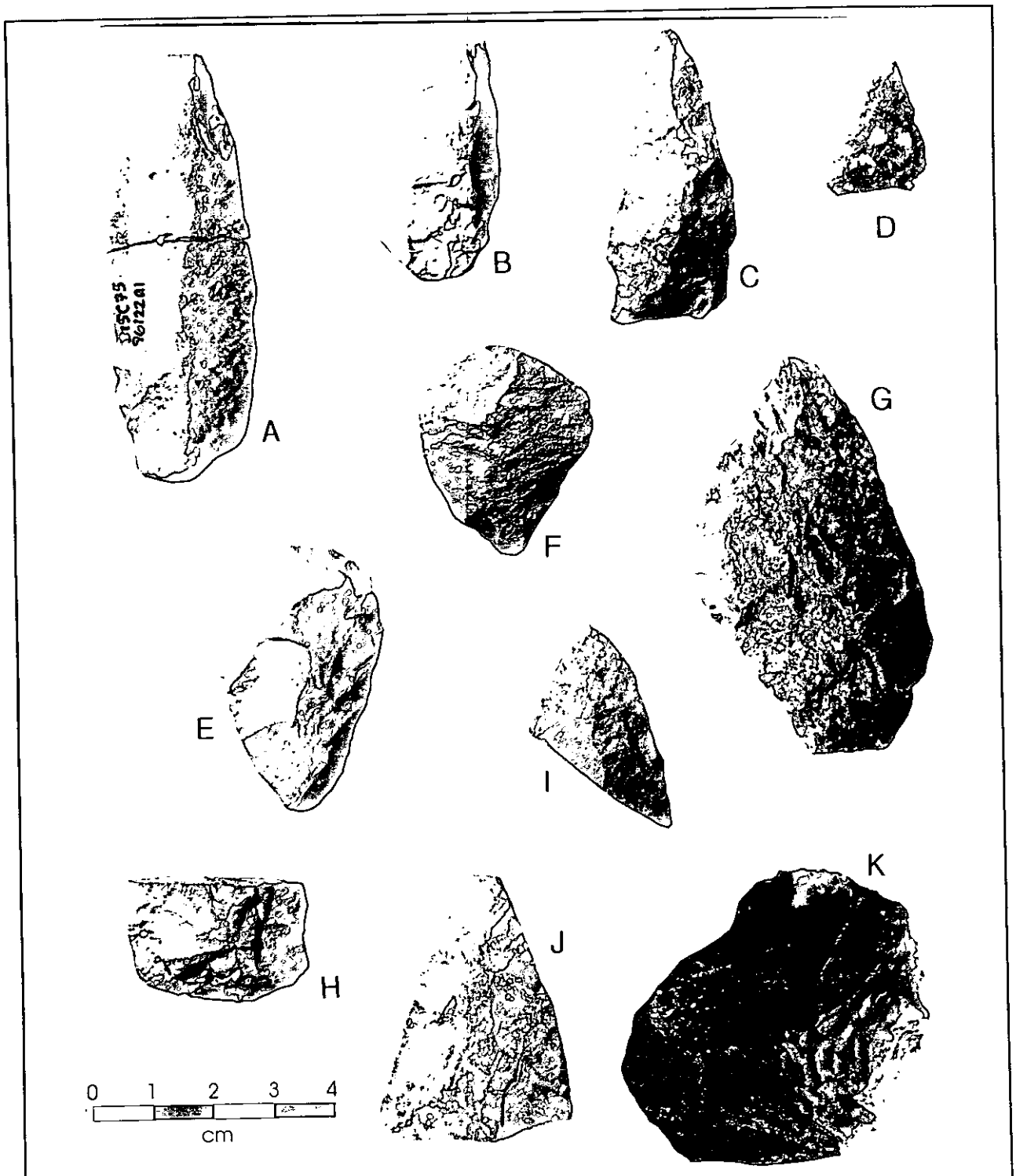


Figure 45. Projectile points and other tools recovered from the Camp Mackall Drop Zone survey. A-B, Guilford Lanceolates (31SC75, 31SC88); C, Gypsy Stemmed (31SC88); D, Caraway Triangular (31SC88); E-F, scrapers (31SC71, 31SC66); G-J, bifaces (31SC88, 31SC72, 31SC68, 31SC88); K, used flake (31SC101).

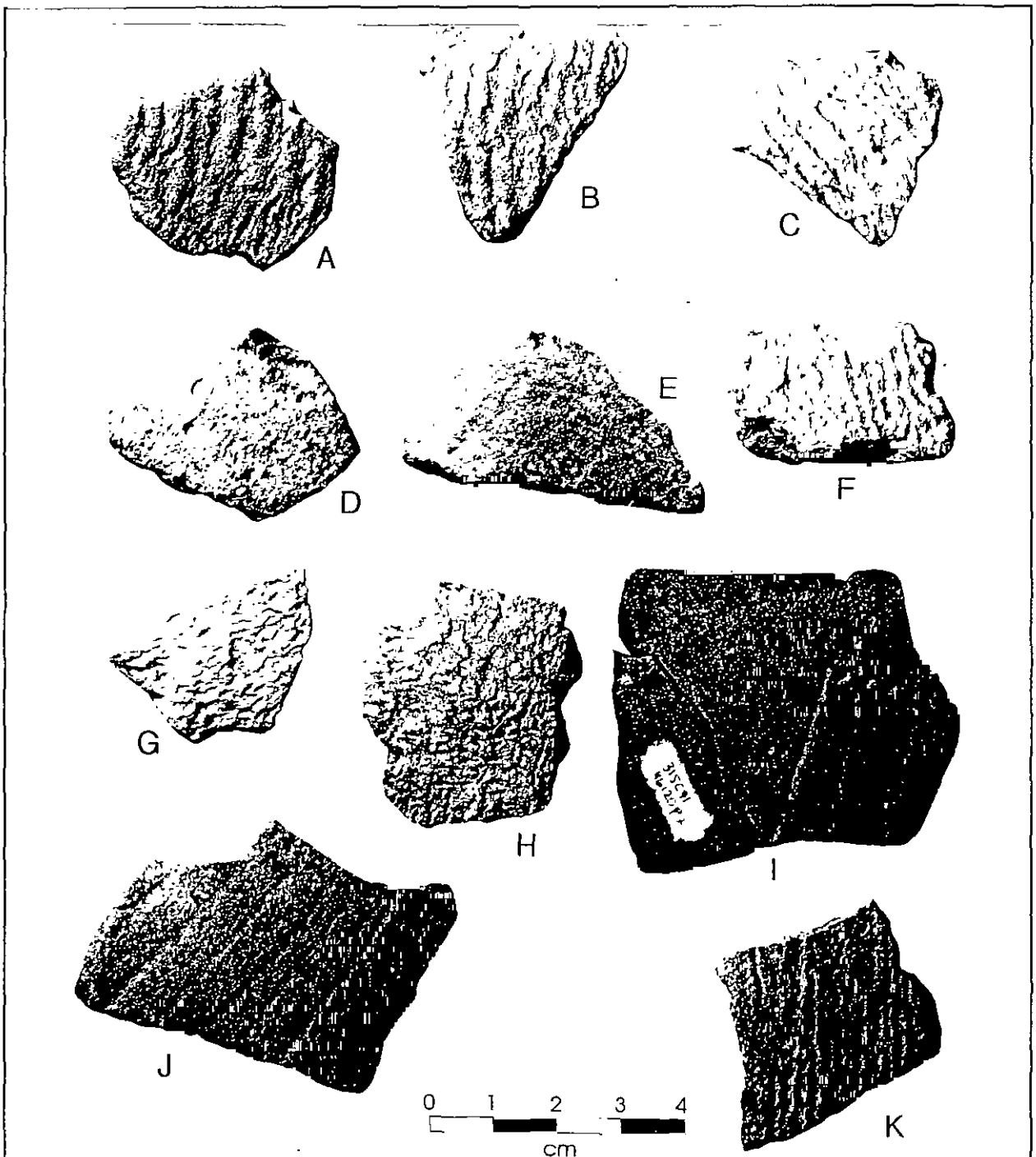


Figure 46. Pottery recovered from the Camp Mackall Drop Zone survey. A-C, Yadkin Cord Marked (31SC98, 31SC71, 31SC72); D-E, Yadkin Fabric Impressed (31SC72, 31SC100); F, Hanover Cord Marked (31SC71); G-H, Hanover Fabric Impressed (31SC72, 31SC71); I-J, Adam's Creek Incised (31SC71); K, Adam's Creek Cord Marked (31SC71).

associated with the Tuscarora influence on the southern coast is typically not found more than a few kilometers inland (see Loftfield 1976:194). The materials in the Camp Mackall area may therefore represent trade wares.

Also present in the collection are 33 small (i.e., under 2.5 cm in diameter) unidentifiable sherds. No attempt has been made to type these materials because essential information on paste and surface treatment are difficult, or impossible, to obtain.

**Recommendations**

It is advised that the site recommended as potentially eligible (31SC88) be tested as soon as possible, with immediate data recovery if it is determined to be eligible for inclusion on the National Register. Continued military training places the site at risk, as does continued exposure to scouring winds and erosional rains. In addition, this site, like others at the Camp Mackall and Fort Bragg installations, is subject to collection.

This site, while cleared and in an area of military operations, may be sufficiently close to Beaver Dam Creek that it can be cordoned off, allowing archaeological research with minimal disruption to military training.

As we have recommended in the past, given the amount of damage we have observed on the Camp Mackall and Sicily Drop Zones, it is important that other drop zones be evaluated for cultural remains as soon as possible. Delays in identification and evaluation of archaeological resources are likely to cause significant losses of archaeological information.

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# APPENDIX 1.
# SPECIMEN CATALOG

Accession Number: 96103

Site Number: 31 SC 91

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | Site 1, N200 E200 | 2 | flakes (metavolcanic) | |
| m2 | Site 1, N210 E200 | 22 | flakes (metavolcanic) | |
| m3 | TU1 40-50 cm | 5 | flakes (metavolcanic) | |
| m4 | TU1 50-60 cm | 10 | flakes (metavolcanic) | |

Accession Number: 96104

Site Number: 31 SC 92

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | TR 28 ST#1 (N200 E200) | 1 | flake (metavolcanic) | |
| m2 | TR 28 ST#2 (N230 E200) | 2 | flakes (metavolcanic) | |

Accession Number: 96105

Site Number: 31 SC 93

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | ST16 15M | 8 | flakes (metavolcanic) | |
| m2 | TU6 20-30 cm | 12 | flakes (metavolcanic) | |
| m3 | TU6 30-40 cm | 2 | flakes (metavolcanic) | |
| m4 | TU6 40-50 cm | 2 | flakes (metavolcanic) | |

Accession Number: 96106

Site Number: 31 SC 94

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | ST2 N200 E200 | 18 | flakes (5 metavolcanic, 13 quartz) | |

Accession Number: 96107

Site Number: 31 SC 95

Recorder: W. O'CONNOR

Date: 28May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | Collection Unit 1 | 14 | flakes (13 metavolcanic, 1 quartz) | |
| m2 | Collection Unit 2 | 168 | flakes (165 metavolcanic, 3 quartz) | |
| m3 | Collection Unit 3 | 19 | flakes (metavolcanic) | |

APPENDIX 1. SPECIMEN CATALOG

Accession Number: 96108

Site Number: 31 SC 96 & 96**

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | Collection Unit 3 | 11 | flakes (9 metavolcanic, 2 quartz) | |
| m2 | Collection Unit 4 | 1 | flake (metavolcanic) | |
| p3 | Collection Unit 5 | 3 | small sherds (4.23g) | |
| m4 | | 3 | flakes (2 metavolcanic, 1 quartz) | |
| m5 | Collection Unit 6 | 5 | flakes (4 metavolcanic, 1 quartz) | |
| p6 | Collection Unit 7 | 1 | small sherd (1.77g) | |
| m7 | | 16 | flakes (13 metavolcanic, 3 quartz) | |
| p8 | Collection Unit 8 | 1 | large sherd-rim (5.19g)(Yadkin plain) | X |
| p9 | | 6 | small sherds (12.67g) | |
| b10 | | 1 | bone, UID (0.44g) | |
| m11 | | 7 | flakes (metavolcanic) | |
| m12 | Collection Unit 9 | 1 | flake (metavolcanic) | |
| m13 | Collection Unit 11 | 1 | flake (quartz) | |
| m14 | Collection Unit 12 | 14 | flakes (13 metavolcanic, 1 quartz) | |
| p15 | Collection Unit 13 | 2 | stoneware (Bristol) | X |
| m16 | | 12 | flakes (10 metavolcanic, 2 quartz) | |
| p17 | Collection Unit 14 | 1 | small sherd (6.85g) | |

Accession Number: 96109

Site Number: 31 SC 97

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | Collection Unit 1 | 2 | flakes (metavolcanic) | |
| m2 | Collection Unit 2 | 4 | flakes (metavolcanic) | |
| m3 | Collection Unit 3 | 33 | flakes (metavolcanic) | |
| m4 | Collection Unit 4 | 7 | flakes (metavolcanic) | |
| m5 | Collection Unit 6 | 6 | flakes (metavolcanic) | |
| m6 | N210 E 200 | 5 | flakes (metavolcanic) | |

Accession Number: 96110

Site Number: 31 SC 98 & 98**

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| a1 | Collection Unit 1-Historic | 10 | glass, manganese | X |
| a2 | | 4 | glass, light green | X |
| a3 | | 6 | glass, clear | X |
| a4 | | 3 | glass, melted | X |
| a5 | | 1 | glass, milk | X |
| a6 | | 1 | military emblem | X |
| p7 | | 5 | stoneware, salt glaze | X |
| p8 | | 14 | stoneware, slip | X |
| p9 | | 9 | whiteware | X |
| a10 | TU13 50-60 cm | 1 | glass, burnt | X |
| p11 | | 1 | whiteware, burnt | X |
| p12 | TU13 70-80 cm | 1 | large sherd (11.16g)(Badin cord marked) | X |
| a13 | Collection Unit 1-Prehistoric | 1 | projectile point (CSPP-MorrowMountain base) | X |
| p14 | | 2 | small sherds (9.25g) | |
| m15 | | 14 | flakes (metavolcanic) | |
| m16 | | 15 | flakes (quartz) | |
| a17 | | 2 | used flakes | |
| X | | | | |

Accession Number: 96111

Site Number: 31 SC 99

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | ISO #1 TR128 ST5 | 1 | flake (metavolcanic) | |

## APPENDIX 1. SPECIMEN CATALOG

Accession Number: 96112

Site Number: 31 SC 100

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| p1 | ISO # 2 TR 1 39 ST8 | 1 | large sherd (9.80g)(Yadkin fabric impressed) | X |

Accession Number: 96113

Site Number: 31 SC 101

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| a1 | ISO # 3 TR1 ST17 | 1 | flake (used) | X |

Accession Number: 96114

Site Number: 31 SC 102

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| a1 | ISO #4 TR14 ST4 | 1 | biface/UID projectile point | X |

Accession Number: 96115

Site Number: 31CD455**

Recorder: W. O'Connor

Date: 15 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| p1 | TR27B, ST1 | 2 | ceramics (whiteware, undec) | X |
| p2 | N200E180 | 4 | ceramics (whiteware, undec) | X |

Accession Number: 96116

Site Number: 31CD456

Recorder: W. O'Connor

Date: 15 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | TR44-B, ST 4 (N200E200) | 2 | flakes (quartz) | |
| m2 | N200E210 | 1 | flakes (quartz) | |
| m3 | N180E210 | 3 | flakes (metavolcanic) | |
| m4 | TU2B 20-30cm | 2 | flakes (quartz) | |
| m5 | " | 3 | raw material (109.75g) | |

Accession Number: 96117

Site Number: 31CD457

Recorder: W. O'Connor

Date: 15 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | Iso #1, T18, ST4 | 1 | flake (metavolcanic) | |

APPENDIX 1. SPECIMEN CATALOG

Accession Number: 96118

Site Number: 31 SC 66 & 66**

Recorder: W O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | N190 E175 | 1 | flake (metavolcanic) | |
| m2 | N190 E185 | 1 | flake (metavolcanic) | |
| m3 | N200 E235 30-40 cm | 2 | flakes (metavolcanic) | |
| m4 | N200 E235 40-50 cm | 1 | flake (metavolcanic) | |
| m5 | N200 E245 0-20 cm | 1 | flake (metavolcanic) | |
| m6 | N200 E245 20-30 cm | 1 | flake (metavolcanic) | |
| m7 | N200 E255 | 1 | flake (metavolcanic) | |
| a8 | Collection Unit 1, prehistoric | 1 | scraper | X |
| a9 | | 3 | biface fragments | X |
| p10 | | 1 | large sherd (7.81g)(Yadkin fabric marked) | X |
| p11 | | 3 | small sherds (9.58g) | |
| m12 | | 12 | flakes (quartz) | |
| m13 | | 137 | flakes (metavolcanic) | |
| a14 | | 27 | glass, clear | X |
| a15 | Collection Unit 2, prehistoric | 2 | glass, green (modern) | X |
| a16 | | 1 | glass, brown | X |
| p17 | | 1 | stoneware, slip | X |
| m18 | | 2 | flakes (quartz) | |
| m19 | | 18 | flakes (metavolcanic) | |

Accession Number: 96119

Site Number: 31 SC 68

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | Collection Unit 1 | 33 | flakes (25 metavolcanic, 8 quartz) | |
| a1/1 | | 1 | biface | X |
| p2 | Collection Unit 2 | 4 | small sherds (11.06g) | |
| m3 | | 56 | flakes (45 metavolcanic, 11 quartz) | |
| a4 | Collection Unit 3 | 1 | used flake | X |
| m5 | | 181 | flakes (112 metavolcanic, 69 quartz) | |
| m6 | | 2 | raw material (16.11g) | |
| m7 | Collection Unit 4 | 12 | flakes (2 metavolcanic, 10 quartz) | |
| m8 | Collection Unit 5 | 69 | flakes (66 metavolcanic, 3 quartz) | |
| m9 | Collection Unit 6 | 36 | flakes (34 metavolcanic, 2 quartz) | |
| m10 | Collection Unit 7 | 5 | flakes (metavolcanic) | |
| m11 | Collection Unit 8 | 6 | flakes (4 metavolcanic, 2 quartz) | |
| m12 | Collection Unit 9 | 2 | flakes (1 metavolcanic, 1 quartz) | |
| m13 | Collection Unit 10 | 4 | flakes (metavolcanic) | |
| m14 | Collection Unit 11 | 2 | flakes (quartz) | |

APPENDIX 1. SPECIMEN CATALOG

Accession Number: 96120 

Site Number: 31 SC 71

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | TU5 0-10 cm | 2 | flakes ( metavolcanic) | |
| m2 | TU5 10-20 cm | 3 | flakes (metavolcanic) | |
| m3 | TU5 20-30 cm | 3 | flakes (metavolcanic) | |
| p4 | TU5 30-40 cm | 1 | large sherd-rim (3.97g) (Adams Creek) (Mend with p7) | X |
| m5 | | 3 | flakes (metavolcanic) | |
| m6 | TU5 40-50 cm | 2 | flakes (metavolcanic) | |
| p7 | TU5 50-60 cm | 2 | large sherds (25.47g)(Adams Creek)(Mend) | X |
| p8 | TU5 60-70 cm | 1 | large sherd (13.0g)(Adams Creek) | X |
| m9 | ST6, surface and subsurface | 5 | flakes (4 metavolcanic, 1 quartz) | |
| a10 | Collection Unit 1 | 2 | projectile points (1 Morrow Mt I, 1 Morrow Mt II) | X |
| p11 | | 4 | large sherds (31.48g)(3 Adams Creek, 1 Hanover cord marked) | X |
| m12 | | 2 | raw material (8.07g) | |
| p13 | | 19 | small sherds (62.95g) | |
| m14 | | 119 | flakes (113 metavolcanic, 6 quartz) | |
| p15 | Collection Unit 2 | 4 | small sherds (14.87g) | |
| m16 | | 25 | flakes (18 metavolcanic, 7 quartz) | |
| m17 | | 1 | raw material (115.0g) | |
| p18 | Collection Unit 3 | 1 | small sherd (6.18g) | |
| p19 | | 1 | small sherd (1.94g) | |
| m20 | | 50 | flakes (40 metavolcanic, 10 quartz) | |
| b21 | | 2 | bone , animal (0.22g) | |
| m22 | Collection Unit 4 | 2 | flakes (1 metavolcanic, 1 quartz) | |
| m23 | Collection Unit 6 | 2 | flakes (metavolcanic) | |
| m24 | Collection Unit 7 | 2 | flakes (1 metavolcanic, 1 quartz) | |
| m25 | Collection Unit 8 | 3 | flakes (1 metavolcanic, 2 quartz) | |
| m26 | Collection Unit 9 | 1 | flake (quartz) | |
| m27 | Collection Unit 10 | 1 | flake (metavolcanic) | |
| m28 | Collection Unit 12 | 10 | flakes (8 metavolcanic, 2 quartz) | |
| m29 | Collection Unit 13 | 1 | flake (quartz) | |
| p30 | Collection Unit 15 | 1 | large sherd (10.01g)(Hanover fabric impressed) | X |
| p31 | | 2 | small sherds (7.48g) | |
| a32 | Collection Unit 15 | 1 | scraper (11.20g) | X |
| m33 | | 3 | raw material (80.57g) | |
| m34 | | 49 | flakes (44 metavolcanic, 5 quartz) | |

Accession Number: 96120 page 2 of 2

Site Number: 31 SC 71

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| p35 | Collection Unit 16 | 2 | large sherds (16.29g) | X |
| p36 | | 1 | small sherd (2.06g) | |
| m37 | | 114 | flakes ( 65 metavolcanic, 49 quartz) | |
| m38 | Collection Unit 17 | 8 | flakes (4 metavolcanic, 4 quartz) | |

Accession Number: 96121

Site Number: 31 SC 72

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | Collection Unit 1 | 17 | flakes (14 metavolcanic, 3 quartz) | |
| b2 | Collection Unit 2 | 3 | bone, UID (0.74g) | |
| m3 | | 16 | flakes (15 metavolcanic, 1 quartz) | |
| a4 | | 1 | biface fragment | X |
| m5 | Collection Unit 3 | 1 | flake (metavolcanic) | |
| b6 | Collection Unit 4 | 1 | bone, animal | |
| p7 | | 9 | small sherds (22.07g) | |
| p8 | | 6 | large sherds (63.25g) (2 Hanover fabric impressed, 1 Yadkin cord marked 3 Yadkin fabric impressed) | X |
| m9 | | 67 | flakes (58 metavolcanic, 9 quartz) | |
| m10 | TU8 20-30 cm | 2 | flakes (secondary metavolcanic) | |

APPENDIX 1. SPECIMEN CATALOG

Accession Number: 96122

Site Number: 31 SC 75

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| a1 | Collection Unit 1 | 2 | projectile point (Guilford)(Mend) | X |
| a1/1 | | 1 | biface | X |
| m2 | | 12 | flakes (metavolcanic) | |
| m3 | Collection Unit 2 | 23 | flakes (20 metavolcanic, 3 quartz) | |
| a4 | | 1 | projectile point (Morrow Mountain I) | X |
| p5 | Collection Unit 3 | 2 | small sherds (8.11g) | |
| m6 | | 29 | flakes (22 metavolcanic, 7 quartz) | |
| m7 | Collection Unit 4 | 16 | flakes (14 metavolcanic, 2 quartz) | |
| p8 | Collection Unit 5 | 1 | small sherd (1.88g) | |
| m9 | | 7 | flakes (5 metavolcanic, 2 quartz) | |
| a10 | Collection Unit 6 | 1 | projectile point (Morrow Mountain II) | X |
| m11 | | 15 | flakes (12 metavolcanic, 3 quartz) | |

Accession Number: 96123

Site Number: 31 SC 87 & 87**

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | TR62-63 Collection Unit 1 | 45 | flakes (27 metavolcanic, 18 quartz) | |
| m2 | | 1 | raw material (3.65g) | |
| m3 | TR63-64 Collection Unit 2 | 50 | flakes (29 metavolcanic, 21 quartz) | |
| a4 | TR72 Collection Unit 3 | 1 | whiteware | X |
| m5 | | 32 | flakes (16 metavolcanic, 16 quartz) | |
| p6 | Collection Unit 4 | 2 | small sherds (8.48g) | |
| m7 | | 32 | flakes (21 metavolcanic, 11 quartz) | |
| m8 | Collection Unit 5 | 31 | flakes (16 metavolcanic, 15 quartz) | |
| m9 | | 1 | raw material (15.58g) | |
| m10 | TU4 30-40 cm | 7 | flakes (6 metavolcanic, 1 quartz) | |
| m11 | TU4 40-50 cm | 1 | flake (metavolcanic) | |

Accession Number: 96124 page 1 of 2

Site Number: 31 SC 88 & 88**

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| m1 | TU #3 0-10 cm | 1 | flake (metavolcanic) | |
| m2 | TU #3 10-20 cm | 1 | flake (metavolcanic) | |
| m3 | ST #3 (N200 E200) | 1 | flake (quartz) | |
| m4 | ST #4 (N230 E200) | 2 | flakes (metavolcanic) | |
| m5 | N155 E200 | 1 | flake (metavolcanic) | |
| m6 | N185 E245 | 3 | flakes (2 metavolcanic, 1 quartz) | |
| m7 | N190 E185 | 1 | flake (metavolcanic) | |
| m8 | N215 E110 | 1 | flake (metavolcanic) | |
| m9 | N215 E200 | 1 | flake (metavolcanic) | |
| m10 | N260 E245 | 1 | flake (metavolcanic) | |
| m11 | Collection Unit 1 | 14 | flakes (8 metavolcanic, 6 quartz) | |
| m12 | Collection Unit 2 | 3 | flakes (1 metavolcanic, 2 quartz) | |
| p13 | | 1 | small sherd (2.62g) | |
| m14 | Collection Unit 3 | 2 | flakes (quartz) | |
| m15 | Collection Unit 4 | 5 | flakes (1 metavolcanic, 4 quartz) | |
| a16 | Collection Unit 5 | 1 | projectile point (Morrow Mt II) | X |
| m17 | | 1 | raw material (33.87g ) | |
| m18 | | 31 | flakes (19 metavolcanic, 12 quartz) | |
| m19 | Collection Unit 6 | 33 | flakes (22 metavolcanic, 11 quartz) | |
| p20 | Collection Unit 7 | 1 | large sherd (9.66g)(Yadkin eroded) | X |
| m21 | | 5 | flakes (2 metavolcanic, 3 quartz) | |
| m22 | Collection Unit 8 | 1 | flake (metavolcanic) | |
| p23 | Collection Unit 9 | 1 | large sherd (7.52g)(Yadkin cord marked)X | |
| p24 | | 2 | small sherds (8.63g) | |
| p25 | | 2 | ceramics (whiteware) | X |
| m26 | | 105 | flakes (66 metavolcanic, 39 quartz) | |
| a27 | Collection Unit 10 | 3 | projectile points (1 Guilford -base portion, 1 Hardaway side notched, 1 Big Sandy) | X |
| m28 | | 13 | flakes (8 metavolcanic, 5 quartz) | |
| a29 | Collection Unit 11 | 1 | biface fragment | X |
| p30 | | 6 | small sherds (14.85g) | |
| m31 | | 4 | flakes (3 metavolcanic, 1 quartz) | |
| a32 | Collection Unit 12 | 1 | projectile point (Gypsy stemmed) | X |
| p33 | | 2 | small sherds (5.67g) | |
| m34 | Collection Unit 12 | 3 | flakes (2 metavolcanic, 1 quartz) | |
| m35 | Collection Unit 13 | 2 | flakes (1 metavolcanic, 1 quartz) | |
| a36 | Collection Unit 17 | 6 | 5 biface frags, 1 projectile point (Caraway) | X |
| p37 | | 1 | small sherd (4.71g) | |
| m38 | | 70 | flakes (50 metavolcanic, 20 quartz) | |
| m39 | | 54 | shell (245.72g) | |

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Site Number: 31 SC 88 & 88**

Recorder: W. O'CONNOR

Date: 28 May 1996

| Spec. No. | Location | Number | Description | Class One |
|---|---|---|---|---|
| a40 | Collection Unit 18 | 1 | glass, milk | X |
| m41 | | 4 | shell (22.58g) | |
| m42 | | 52 | flakes (38 metavolcanic, 14 quartz) | |
| p43 | Collection Unit 19 | 1 | whiteware | X |
| a44 | | 1 | hammerstone fragment | X |
| m45 | | 4 | raw material (37.96g) | |
| m46 | | 55 | flakes (37 metavolcanic, 18 quartz) | |
| a47 | Collection Unit 20 | 1 | biface fragment | X |
| m48 | | 14 | flakes ( 6 metavolcanic, 8 quartz) | |
| p49 | | 1 | stoneware, saltglaze | X |
| p50 | Collection Unit 21 | 3 | 1 whiteware (poly HP), 2 bisque porcelain | X |
| m51 | | 1 | flake (quartz) | |
| p52 | Collection Unit 26 | 1 | large sherd (8.59g)(Yadkin plain) | X |
| p53 | Collection Unit 27 | 1 | large sherd (8.75g)(Yadkin eroded) | X |
| a54 | | 1 | projectile point (Kirk corner-notched) | X |
| m55 | | 99 | flakes (80 metavolcanic, 19 quartz) | |
| m56 | | 4 | raw material (22.61g) | |
| m57 | Collection Unit 28 | 2 | flakes (quartz) | |
| m58 | Collection Unit 29 | 3 | flakes (2 metavolcanic, 1 quartz) | |
| p59 | Collection Unit 30 | 1 | small sherd (4.18g) | |
| p60 | | 1 | porcelain | X |
| m61 | Collection Unit 30 | 8 | flakes (4 metavolcanic, 4 quartz) | |
| m62 | Collection Unit 34 | 27 | flakes (24 metavolcanic, 3 quartz) | |
| m63 | | 1 | raw material (19.48g) | |